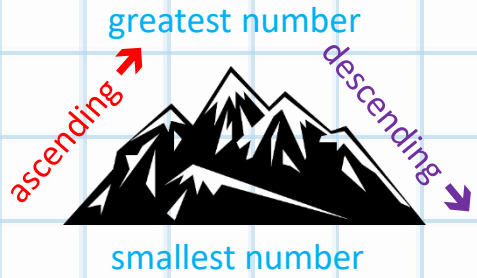
## Page / Subject

# Ordering Whole Numbers




## Step 1

Place all your numbers in a column, with all the digits aligned correctly and then check whether you're placing them in ascending or descending order.

| | | | |
|---|---|---|---|
| 3 | 4 | 3 | 6 |
| 3 | 3 | 6 | 4 |
| | 3 | 4 | 6 |

## Step 2

Compare the digits starting from the left, if they're the same value look at the next column until you find a difference.

400 is larger than 300 so 3436 is larger than 3364.

| | | | |
|---|---|---|---|
| 3 | 4 | 3 | 6 |
| 3 | 3 | 6 | 4 |
| | 3 | 4 | 6 |

Both digits are the same so we look at the hundreds.

**Ascending Order**

346, 3364, 3436

**Descending Order**

3436, 3364, 346

## Put the following numbers in **ascending order**

| | | | |
|---|---|---|---|
| 25,364 | 36,645 | 38,895 | 26,645 |
| | | | |
| 125,407 | 125,704 | 125,470 | 124,740 |
| | | | |
| 79,875 | 79,785 | 79,857 | 79,758 |
| | | | |

## Put the following numbers in **descending order**

| | | | |
|---|---|---|---|
| 405,436 | 405,634 | 406,534 | 440,354 |
| | | | |
| 56,890 | 57,908 | 59,809 | 58,098 |
| | | | |
| 879,123 | 879,312 | 879,213 | 879,321 |
| | | | |

# Ordering Whole Numbers Answers


## Step 1

Place all your numbers in a column, with all the digits aligned correctly and then check whether you're placing them in ascending or descending order.

| | | | |
|---|---|---|---|
| 3 | 4 | 3 | 6 |
| 3 | 3 | 6 | 4 |
| | 3 | 4 | 6 |

## Step 2

Compare the digits starting from the left, if they're the same value look at the next column until you find a difference.

400 is larger than 300 so 3436 is larger than 3364.

| | | | |
|---|---|---|---|
| 3 | 4 | 3 | 6 |
| 3 | 3 | 6 | 4 |
| | 3 | 4 | 6 |

Both digits are the same so we look at the hundreds.

**Ascending Order**

346, 3364, 3436

**Descending Order**

3436, 3364, 346

## Put the following numbers in **ascending order**

| | | | |
|---|---|---|---|
| 25,364 | 36,645 | 38,895 | 26,645 |
| 25,364 | 26,645 | 36,645 | 38,895 |
| 125,407 | 125,704 | 125,470 | 124,740 |
| 124,740 | 125,407 | 125,470 | 125,704 |
| 79,875 | 79,785 | 79,857 | 79,758 |
| 79,758 | 79,785 | 79,857 | 79,875 |

## Put the following numbers in **descending order**

| | | | |
|---|---|---|---|
| 405,436 | 405,634 | 406,534 | 440,354 |
| 440,354 | 406,534 | 405,634 | 405,436 |
| 56,890 | 57,908 | 59,809 | 58,098 |
| 59,809 | 58,098 | 57,908 | 56,890 |
| 879,123 | 879,312 | 879,213 | 879,321 |
| 879,321 | 879,312 | 879,213 | 879,123 |

# Comparing Whole Numbers

| smaller than | larger than | equal to |
|---|---|---|
| < | > | = |

## Step 1

Place your numbers in a column, with all the digits aligned correctly.

| | | | |
|---|---|---|---|
| 3 | 4 | 3 | 6 |
| 3 | 3 | 6 | 4 |

## Step 2

Compare the digits starting from the left, if they're the same value look at the next column until you find a difference.

| | | | |
|---|---|---|---|
| 3 | 4 | 3 | 6 |
| 3 | 3 | 6 | 4 |

400 is larger than 300 so 3436 is larger than 3364.

Both digits are the same so we look at the hundreds.

## Step 3

Choose the correct symbol for the numbers.

*3436 > 3364*

*"3436 is larger than 3364."*

Use >, < or = to compare these numbers.

| | | |
|---|---|---|
| 4564 | | 4654 |
| 216,346 | | 265,489 |
| 104,256 | | 102,654 |
| 35,647 | | 35,647 |
| 591,654 | | 59,654 |
| 20,459 | | 10,459 |
| 364,563 | | 364,562 |
| 2,078,264 | | 2,087,264 |
| 498,697 | | 489,697 |
| 1,067,829 | | 1,076,829 |

# Comparing Whole Numbers Answers

| smaller than | larger than | equal to |
|---|---|---|
| < | > | = |

## Step 1

Place your numbers in a column, with all the digits aligned correctly.

| | | | |
|---|---|---|---|
| 3 | 4 | 3 | 6 |
| 3 | 3 | 6 | 4 |

## Step 2

Compare the digits starting from the left, if they're the same value look at the next column until you find a difference.

| | | | |
|---|---|---|---|
| 3 | 4 | 3 | 6 |
| 3 | 3 | 6 | 4 |

400 is larger than 300 so 3436 is larger than 3364.

Both digits are the same so we look at the hundreds.

## Step 3

Choose the correct symbol for the numbers.

*3436 > 3364*

*"3436 is larger than 3364."*

Use >, < or = to compare these numbers.

| | | |
|---|---|---|
| 4564 | < | 4654 |
| 216,346 | < | 265,489 |
| 104,256 | < | 102,654 |
| 35,647 | = | 35,647 |
| 591,654 | > | 59,654 |
| 20,459 | > | 10,459 |
| 364,563 | > | 364,562 |
| 2,078,264 | < | 2,087,264 |
| 498,697 | > | 489,697 |
| 1,067,829 | < | 1,076,829 |

# Negative Numbers

| ⁻5 | ⁻4 | ⁻3 | ⁻2 | ⁻1 | 0 | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|---|---|---|---|

## Step 1

Negative numbers are numbers smaller than zero. Draw yourself a number line like the above if you need to, to help you.

## Step 2

Use your number line just like a normal one for answering questions.
For 3 – 7, start at 3 and count back 7 spaces.

| ⁻5 | ⁻4 | ⁻3 | ⁻2 | ⁻1 | 0 | 1 | 2 | **3** | 4 | 5 |
|---|---|---|---|---|---|---|---|---|---|---|

So 3 – 7 = ⁻4

## Step 3

For ⁻3 + 5, you would start at ⁻3 and count forwards 5 spaces.

| ⁻5 | ⁻4 | **⁻3** | ⁻2 | ⁻1 | 0 | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|---|---|---|---|

So ⁻3 + 5 = 2

| Calculation | Answer |
|---|---|
| 8 – 10 = | |
| ⁻8 + 4 = | |
| 5 – 13 = | |
| ⁻1 + 16 = | |
| 32 – 48 = | |
| ⁻28 + 14 = | |
| ⁻3 – 13 = | |
| ⁻5 + 34 = | |
| 15 – 37 = | |
| ⁻42 + 16 = | |
| ⁻4 – 25 = | |
| ⁻46 + 87 = | |
| 37 – 58 = | |
| ⁻329 + 150 = | |

# Negative Numbers Answers

| ⁻5 | ⁻4 | ⁻3 | ⁻2 | ⁻1 | 0 | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|---|---|---|---|

## Step 1

Negative numbers are numbers smaller than zero. Draw yourself a number line like the above if you need to, to help you.

## Step 2

Use your number line just like a normal one for answering questions.
For 3 – 7, start at 3 and count back 7 spaces.

| ⁻5 | ⁻4 | ⁻3 | ⁻2 | ⁻1 | 0 | 1 | 2 | **3** | 4 | 5 |
|---|---|---|---|---|---|---|---|---|---|---|

So 3 – 7 = ⁻4

## Step 3

For ⁻3 + 5, you would start at ⁻3 and count forwards 5 spaces.

| ⁻5 | ⁻4 | **⁻3** | ⁻2 | ⁻1 | 0 | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|---|---|---|---|

So ⁻3 + 5 = 2

| Calculation | Answer |
|---|---|
| 8 – 10 = | ⁻2 |
| ⁻8 + 4 = | ⁻4 |
| 5 – 13 = | ⁻8 |
| ⁻1 + 16 = | 15 |
| 32 – 48 = | ⁻16 |
| ⁻28 + 14 = | ⁻14 |
| ⁻3 – 13 = | ⁻16 |
| ⁻5 + 34 = | 29 |
| 15 – 37 = | ⁻22 |
| ⁻42 + 16 = | ⁻26 |
| ⁻4 – 25 = | ⁻29 |
| ⁻46 + 87 = | 41 |
| 37 – 58 = | ⁻21 |
| ⁻329 + 150 = | ⁻179 |

# Rounding Whole Numbers

## Step 1

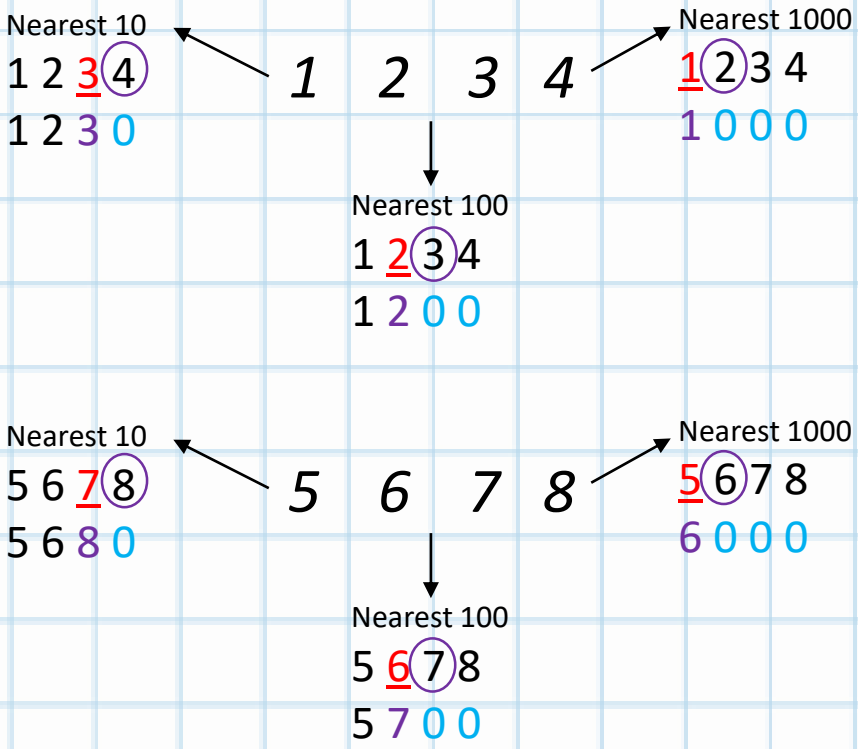
Find out what you're rounding to and underline the digit in that column.

## Step 2

Circle the number to the right of the underlined digit. If it's 5 or more, add one more to the underlined digit. If it's 4 or less, leave it as it is.

## Step 3

Replace the circled number to a zero, and change any other number to the right of it to a zero as well.



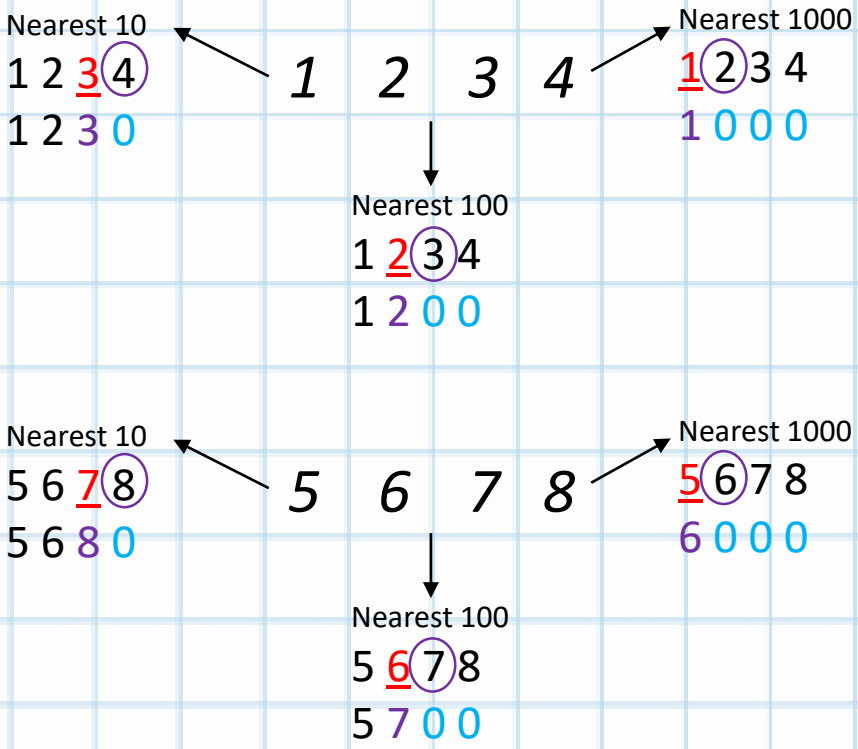

| | Nearest 10 | Nearest 100 | Nearest 1000 |
|---|---|---|---|
| 327 | | | |
| 192 | | | |
| 853 | | | |
| 769 | | | |
| 407 | | | |
| 250 | | | |
| 1436 | | | |
| 1825 | | | |
| 2413 | | | |
| 3179 | | | |
| 6952 | | | |
| 4577 | | | |
| 9552 | | | |
| 15,295 | | | |

# Rounding Whole Numbers **Answers**

## Step 1
Find out what you're rounding to and underline the digit in that column.

## Step 2
Circle the number to the right of the underlined digit. If it's 5 or more, add one more to the underlined digit. If it's 4 or less, leave it as it is.

## Step 3
Replace the circled number to a zero, and change any other number to the right of it to a zero as well.




| | Nearest 10 | Nearest 100 | Nearest 1000 |
|---|---|---|---|
| 327 | 330 | 300 | 0 |
| 192 | 190 | 200 | 0 |
| 853 | 850 | 900 | 1000 |
| 769 | 770 | 800 | 1000 |
| 407 | 410 | 400 | 0 |
| 250 | 250 | 300 | 0 |
| 1436 | 1440 | 1400 | 1000 |
| 1825 | 1830 | 1800 | 2000 |
| 2413 | 2410 | 2400 | 2000 |
| 3179 | 3180 | 3200 | 3000 |
| 6952 | 6950 | 7000 | 7000 |
| 4577 | 4580 | 4600 | 5000 |
| 9552 | 9550 | 9600 | 10,000 |
| 15,295 | 15,300 | 15,300 | 15,000 |

# Roman Numerals

| 1 | 5 | 10 | 50 | 100 | 500 | 1000 |
|---|---|---|---|---|---|---|
| I | V | X | L | C | D | M |

## Step 1

Roman Numerals have no place value, so you need to create each digit of the number separately by partitioning.
So:

*1 2 4 9 = 1000 = M*
*200 = CC*
*40 = XL*
*9 = IX*

## Step 2

There are some 'rules'. You cannot have more than 3 of the same numerals in a row. So for the number 4 and the number 9, you would need to do a "subtraction."

## Step 3

Another 'rule' is that if a smaller numeral is in front of a larger numeral, we take this away. If the smaller numeral is after, we add.

*1 2 4 9 = MCCXLIX*

| Roman Numeral | Number |
|---|---|
| DCCXV | |
| MMXLV | |
| MXXII | |
| DXCVII | |
| DCLXI | |
| LXXXIX | |
| XXVI | |
| MMMDCX | |
| XLV | |
| CCLXVIII | |
| CDLX | |
| MCDV | |
| LXI | |
| MDXXVI | |

# Roman Numerals

| 1 | 5 | 10 | 50 | 100 | 500 | 1000 |
|---|---|---|---|---|---|---|
| I | V | X | L | C | D | M |

## Step 1

Roman Numerals have no place value, so you need to create each digit of the number separately by partitioning.
So:

*1 2 4 9 = 1000 = M*
*200 = CC*
*40 = XL*
*9 = IX*

## Step 2

There are some 'rules'. You cannot have more than 3 of the same numerals in a row. So for the number 4 and the number 9, you would need to do a "subtraction."

## Step 3

Another 'rule' is that if a smaller numeral is in front of a larger numeral, we take this away. If the smaller numeral is after, we add.

*1 2 4 9 = MCCXLIX*

| Roman Numeral | Number |
|---|---|
| DCCXV | 715 |
| MMXLV | 2045 |
| MXXII | 1022 |
| DXCVII | 597 |
| DCLXI | 661 |
| LXXXIX | 89 |
| XXVI | 26 |
| MMMDCX | 3610 |
| XLV | 45 |
| CCLXVIII | 268 |
| CDLX | 460 |
| MCDV | 1405 |
| LXI | 61 |
| MDXXVI | 1526 |

# Adding Whole Numbers

## Step 1

Set out your addition in formal column method, aligning the digits in the correct place value columns.

| | | | | |
|---|---|---|---|---|
| | 3 | 4 | 3 | 6 |
| + | | 8 | 9 | 3 |
| | | | | |

| | | | | | |
|---|---|---|---|---|---|
| | 5 | 3 | 4 | 1 | 8 |
| + | 3 | 4 | 1 | 7 | 4 |
| | | | | | |

| | | | | |
|---|---|---|---|---|
| | 2 | 5 | 6 | 3 |
| + | 6 | 8 | 4 | 1 |
| | | | | |

| | | | | | |
|---|---|---|---|---|---|
| | 2 | 7 | 5 | 6 | 3 |
| + | | 2 | 1 | 8 | 0 |
| | | | | | |

| | | | | |
|---|---|---|---|---|
| | 8 | 9 | 1 | 2 |
| + | 3 | 6 | 5 | 8 |
| | | | | |

## Step 2

Starting from the **right,** add each column in turn. Carry digits to the next column if the total adds up to more than 9.

| | | | | |
|---|---|---|---|---|
| | 3 | 4 | 3 | 6 |
| + | | 8 | 9 | 3 |
| | 4 | 3 | 2 | 9 |
| | 1 | | 1 | |

| | | | | | |
|---|---|---|---|---|---|
| | 4 | 9 | 3 | 6 | 2 |
| + | 5 | 8 | 0 | 5 | 9 |
| | | | | | |

| | | | | |
|---|---|---|---|---|
| | 5 | 3 | 7 | 6 |
| + | 2 | 1 | 5 | 4 |
| | | | | |

## Step 3

Make sure any number you've carried over, you've included in your next addition.

| | | | | | | |
|---|---|---|---|---|---|---|
| | | 6 | 5 | 4 | 2 | 3 | 7 |
| + | 1 | 3 | 8 | 2 | 5 | 6 |
| | | | | | | |

# Adding Whole Numbers Answers

## Step 1

Set out your addition in formal column method, aligning the digits in the correct place value columns.

$$\begin{array}{rrrrr} & 3 & 4 & 3 & 6 \\ + & & 8 & 9 & 3 \\ \hline & & & & \\ \hline \end{array}$$

$$\begin{array}{rrrrr} & 5 & 3 & 4 & 1 & 8 \\ + & 3 & 4 & 1 & 7 & 4 \\ \hline & 8 & 7 & 5 & 9 & 2 \\ \hline \end{array}$$

$$\begin{array}{rrrrr} & 2 & 5 & 6 & 3 \\ + & 6 & 8 & 4 & 1 \\ \hline & 9 & 4 & 0 & 4 \\ \hline \end{array}$$

$$\begin{array}{rrrrr} & 2 & 7 & 5 & 6 & 3 \\ + & & 2 & 1 & 8 & 0 \\ \hline & 2 & 9 & 7 & 4 & 3 \\ \hline \end{array}$$

$$\begin{array}{rrrrr} & 8 & 9 & 1 & 2 \\ + & 3 & 6 & 5 & 8 \\ \hline & 1 & 2 & 5 & 7 & 0 \\ \hline \end{array}$$

## Step 2

Starting from the **right,** add each column in turn. Carry digits to the next column if the total adds up to more than 9.

$$\begin{array}{rrrrr} & 3 & 4 & 3 & 6 \\ + & & 8 & 9 & 3 \\ \hline & 4 & 3 & 2 & 9 \\ \hline \end{array}$$

$$\begin{array}{rrrrr} & 4 & 9 & 3 & 6 & 2 \\ + & 5 & 8 & 0 & 5 & 9 \\ \hline 1 & 0 & 7 & 4 & 2 & 1 \\ \hline \end{array}$$

$$\begin{array}{rrrrr} & 5 & 3 & 7 & 6 \\ + & 2 & 1 & 5 & 4 \\ \hline & 7 & 5 & 3 & 0 \\ \hline \end{array}$$

## Step 3

Make sure any number you've carried over, you've included in your next addition.

$$\begin{array}{rrrrrrr} & & 1 & & 1 & & \\ & 6 & 5 & 4 & 2 & 3 & 7 \\ + & 1 & 3 & 8 & 2 & 5 & 6 \\ \hline & 7 & 9 & 2 & 4 & 9 & 3 \\ \hline \end{array}$$

# Subtracting Whole Numbers

## Step 1

Set out your subtraction in formal column method, aligning the digits in the correct place value columns.

$$\begin{array}{rrrrr} & 8 & 5 & 1 & 3 \\ + & & 4 & 2 & 7 \\ \hline & & & & \\ \hline \end{array}$$

$$\begin{array}{rrrrr} & 2 & 6 & 3 & 6 & 4 \\ - & 1 & 2 & 4 & 3 & 4 \\ \hline & & & & & \\ \hline \end{array} \qquad \begin{array}{rrrrr} & 2 & 5 & 2 & 3 \\ - & 1 & 0 & 7 & 1 \\ \hline & & & & \\ \hline \end{array}$$

$$\begin{array}{rrrrr} & 9 & 4 & 6 & 8 & 9 \\ - & & 2 & 5 & 1 & 9 \\ \hline & & & & & \\ \hline \end{array} \qquad \begin{array}{rrrrr} & 8 & 4 & 0 & 8 \\ - & 4 & 1 & 1 & 6 \\ \hline & & & & \\ \hline \end{array}$$

## Step 2

Starting from the **right,** subtract each column in turn.

$$\begin{array}{rrrrr} & 8 & \cancel{5}^{4} & \cancel{1}^{10} & {}^{1}3 \\ + & & 4 & 2 & 7 \\ \hline & 8 & 0 & 8 & 6 \\ \hline \end{array}$$

3 subtract 7 would give us a negative number, so we need to regroup.
We exchange from the number before and carry 10 over. This means we now have 13 – 7 which will give us a positive answer.

$$\begin{array}{rrrrr} & 3 & 9 & 8 & 5 & 9 \\ - & 3 & 4 & 1 & 0 & 3 \\ \hline & & & & & \\ \hline \end{array} \qquad \begin{array}{rrrrr} & 7 & 4 & 9 & 9 \\ - & 6 & 2 & 1 & 6 \\ \hline & & & & \\ \hline \end{array}$$

## Step 3

You always subtract the bottom number from the top. When this can't be done, we need to regroup by exchanging.

$$\begin{array}{rrrrrrr} & 4 & 6 & 1 & 1 & 5 & 7 \\ - & 1 & 5 & 5 & 7 & 2 & 5 \\ \hline & & & & & & \\ \hline \end{array}$$

# Subtracting Whole Numbers Answers

## Step 1

Set out your subtraction in formal column method, aligning the digits in the correct place value columns.

| | | | | |
|---|---|---|---|---|
| | 8 | 5 | 1 | 3 |
| + | | 4 | 2 | 7 |
| | | | | |

| | | | | | |
|---|---|---|---|---|---|
| | 2 | 6 | 3 | 6 | 4 |
| - | 1 | 2 | 4 | 3 | 4 |
| | 1 | 3 | 9 | 3 | 0 |

| | | | | | |
|---|---|---|---|---|---|
| | 9 | 4 | 6 | 8 | 9 |
| - | | 2 | 5 | 1 | 9 |
| | 9 | 2 | 1 | 7 | 0 |

| | | | | | |
|---|---|---|---|---|---|
| | 3 | 9 | 8 | 5 | 9 |
| - | 3 | 4 | 1 | 0 | 3 |
| | | 5 | 7 | 5 | 6 |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | 4 | 6 | 1 | 1 | 5 | 7 |
| - | 1 | 5 | 5 | 7 | 2 | 5 |
| | 3 | 0 | 5 | 4 | 3 | 2 |

## Step 2

Starting from the **right,** subtract each column in turn.

| | | | | |
|---|---|---|---|---|
| | 8 | ~~5~~ 4 | ~~1~~ 10 | 13 1 |
| + | | 4 | 2 | 7 |
| | 8 | 0 | 8 | 6 |

3 subtract 7 would give us a negative number, so we need to regroup.
We exchange from the number before and carry 10 over. This means we now have 13 – 7 which will give us a positive answer.

| | | | | | |
|---|---|---|---|---|---|
| | 2 | 5 | 2 | 3 | |
| - | 1 | 0 | 7 | 1 | |
| | 1 | 4 | 5 | 2 | |

| | | | | | |
|---|---|---|---|---|---|
| | 8 | 4 | 0 | 8 | |
| - | 4 | 1 | 1 | 6 | |
| | 4 | 2 | 9 | 2 | |

| | | | | | |
|---|---|---|---|---|---|
| | 7 | 4 | 9 | 9 | |
| - | 6 | 2 | 1 | 6 | |
| | 1 | 2 | 8 | 3 | |

## Step 3

You always subtract the bottom number from the top. When this can't be done, we need to regroup by exchanging.

# Multiples & Common Multiples



## Step 1

A multiple is a number that is found within the times tables (can be divided by another number without a remainder.
For example:

Multiples of 2 = 2, 4, 6, 8, 10 etc…

## Step 2

To find common multiples, write out the multiples of both numbers.

Multiples of 3 = 3, 6, 9, 12, 15, 18, 21, 24, 30

Multiples of 5 = 5, 10, 15, 20, 25, 30

## Step 3

Look for the numbers that appear in both lists. These will be the common multiples.

15 and 30 appear in both lists of multiples and so they are both common multiples of 3 and 5.

| Question | Answer |
|---|---|
| 5th multiple of 8 | |
| 9th multiple of 3 | |
| 12th multiple of 7 | |
| 6th multiple of 11 | |
| 7th multiple of 4 | |
| 15th multiple of 5 | |

| Least common multiple (LCM) | Answer |
|---|---|
| 5 and 6 | |
| 2 and 8 | |
| 3 and 11 | |
| 9 and 4 | |
| 6 and 7 | |
| 4, 5 and 6 | |

# Multiples & Common Multiples Answers

## Step 1

A multiple is a number that is found within the times tables (can be divided by another number without a remainder.
For example:

Multiples of 2 = 2, 4, 6, 8, 10 etc...

## Step 2

To find common multiples, write out the multiples of both numbers.

Multiples of 3 = 3, 6, 9, 12, 15, 18, 21, 24, 30

Multiples of 5 = 5, 10, 15, 20, 25, 30

## Step 3

Look for the numbers that appear in both lists. These will be the common multiples.

15 and 30 appear in both lists of multiples and so they are both common multiples of 3 and 5.

| Question | Answer |
|---|---|
| 5th multiple of 8 | 40 |
| 9th multiple of 3 | 27 |
| 12th multiple of 7 | 84 |
| 6th multiple of 11 | 66 |
| 7th multiple of 4 | 28 |
| 15th multiple of 5 | 75 |

| Least common multiple (LCM) | Answer |
|---|---|
| 5 and 6 | 30 |
| 2 and 8 | 8 |
| 3 and 11 | 33 |
| 9 and 4 | 36 |
| 6 and 7 | 42 |
| 4, 5 and 6 | 60 |

# Factors & Common Factors

## Step 1

A factor is a number that divides into another number exactly and we often talk about factor pairs. These are the pair of numbers that when multiplied together give us the number as the product (answer).

For example:

Factors of 12 = 1 x 12

2 x 6

3 x 4

## Step 2

Then list your factor pairs in ascending order, ignoring any duplicates.

Factors of 12 = 1, 2, 3, 4, 6, 12

## Step 3

To find the common factors, find the factor pairs of both numbers.

8 = (1) x 8

(2) x (4)

12 = (1) x 12

(2) x 6

3 x (4)

## Step 4

Circle the numbers that appear in both lists. These are your common factors.

Common factors of 8 and 12 = 1, 2, 4

| Factors of: | Answer |
|---|---|
| 8 | |
| 35 | |
| 16 | |
| 40 | |
| 24 | |
| 64 | |

| Greatest common factor (GCF) | Answer |
|---|---|
| 12 and 18 | |
| 30 and 48 | |
| 36 and 45 | |
| 18 and 21 | |
| 9 and 20 | |
| 28, 56 and 70 | |

# Factors & Common Factors Answers

## Step 1

A factor is a number that divides into another number exactly and we often talk about factor pairs. These are the pair of numbers that when multiplied together give us the number as the product (answer).

For example:

Factors of 12 = 1 x 12

2 x 6

3 x 4

## Step 2

Then list your factor pairs in ascending order, ignoring any duplicates.

Factors of 12 = 1, 2, 3, 4, 6, 12

## Step 3

To find the common factors, find the factor pairs of both numbers.

8 = (1) x 8

(2) x (4)

12 = (1) x 12

(2) x 6

3 x (4)

## Step 4

Circle the numbers that appear in both lists. These are your common factors.

Common factors of 8 and 12 = 1, 2, 4

| Factors of: | Answer |
|---|---|
| 8 | 1, 2, 4, 8 |
| 35 | 1, 5, 7, 35 |
| 16 | 1, 2, 4, 8, 16 |
| 40 | 1, 2, 4, 5, 8, 10, 20, 40 |
| 24 | 1, 2, 3, 4, 6, 8, 12, 24 |
| 64 | 1, 2, 4, 8, 16, 32, 64 |

| Greatest common factor (GCF) | Answer |
|---|---|
| 12 and 18 | 6 |
| 30 and 48 | 6 |
| 36 and 45 | 9 |
| 18 and 21 | 3 |
| 9 and 20 | 1 |
| 28, 56 and 70 | 14 |

# Short Multiplication

Year 5 Maths
@miss_teasel

**Step 1**

Set our your multiplication in the formal method. Multiply the top ones digit by the multiplier. Carry any extra digits if needed.

| | | | |
|---|---|---|---|
| | 2 | 1 | 7 |
| x | | | 9 |
| | | | 3 |
| | | 6 | |

**Step 2**

Then move onto the top tens digit and multiply this by the multiplier. Add any digits that have been carried over and carry any extra digits if needed.

| | | | |
|---|---|---|---|
| | 2 | 1 | 7 |
| x | | | 9 |
| | | 5 | 3 |
| | 1 | 6 | |

**Step 3**

Continue moving across the top digits one step at a time until you reach the end.

| | | | |
|---|---|---|---|
| | 2 | 1 | 7 |
| x | | | 9 |
| 1 | 9 | 5 | 3 |
| 1 | 1 | 6 | |

| | | | | |
|---|---|---|---|---|
| | 3 | 9 | 1 | 0 |
| x | | | | 9 |
| | | | | |

| | | | | |
|---|---|---|---|---|
| | 8 | 9 | 2 | 3 |
| x | | | | 5 |
| | | | | |

| | | | | |
|---|---|---|---|---|
| | 4 | 5 | 2 | 9 |
| x | | | | 5 |
| | | | | |

| | | | | |
|---|---|---|---|---|
| | 9 | 5 | 0 | 7 |
| x | | | | 8 |
| | | | | |

| | | | | |
|---|---|---|---|---|
| | 1 | 6 | 5 | 5 |
| x | | | | 8 |
| | | | | |

| | | | | |
|---|---|---|---|---|
| | 8 | 8 | 4 | 6 |
| x | | | | 7 |
| | | | | |

| | | | | |
|---|---|---|---|---|
| | 3 | 6 | 3 | 1 |
| x | | | | 5 |
| | | | | |

| | | | | |
|---|---|---|---|---|
| | 6 | 7 | 2 | 0 |
| x | | | | 6 |
| | | | | |

# Short Multiplication Answers

## Step 1

Set our your multiplication in the formal method. Multiply the top ones digit by the multiplier. Carry any extra digits if needed.

| | | | |
|---|---|---|---|
| | 2 | 1 | 7 |
| x | | | 9 |
| | | | 3 |
| | | 6 | |

| | | | | |
|---|---|---|---|---|
| | 3 | 9 | 1 | 0 |
| x | | | | 9 |
| 3 | 5 | 1 | 9 | 0 |

| | | | | |
|---|---|---|---|---|
| | 8 | 9 | 2 | 3 |
| x | | | | 5 |
| 4 | 4 | 6 | 1 | 5 |

## Step 2

Then move onto the top tens digit and multiply this by the multiplier. Add any digits that have been carried over and carry any extra digits if needed.

| | | | |
|---|---|---|---|
| | 2 | 1 | 7 |
| x | | | 9 |
| | | 5 | 3 |
| | 1 | 6 | |

| | | | | |
|---|---|---|---|---|
| | 4 | 5 | 2 | 9 |
| x | | | | 5 |
| 2 | 2 | 6 | 4 | 5 |

| | | | | |
|---|---|---|---|---|
| | 9 | 5 | 0 | 7 |
| x | | | | 8 |
| 7 | 6 | 0 | 5 | 6 |

## Step 3

Continue moving across the top digits one step at a time until you reach the end.

| | | | |
|---|---|---|---|
| | 2 | 1 | 7 |
| x | | | 9 |
| 1 | 9 | 5 | 3 |
| 1 | 1 | 6 | |

| | | | | |
|---|---|---|---|---|
| | 1 | 6 | 5 | 5 |
| x | | | | 8 |
| 1 | 3 | 2 | 4 | 0 |

| | | | | |
|---|---|---|---|---|
| | 8 | 8 | 4 | 6 |
| x | | | | 7 |
| 6 | 1 | 9 | 2 | 2 |

| | | | | |
|---|---|---|---|---|
| | 3 | 6 | 3 | 1 |
| x | | | | 5 |
| 1 | 8 | 1 | 5 | 5 |

| | | | | |
|---|---|---|---|---|
| | 6 | 7 | 2 | 0 |
| x | | | | 6 |
| 4 | 0 | 3 | 2 | 0 |

# Long Multiplication

## Step 1

Set our your multiplication in the formal method. Multiply the top ones digit by the ones multiplier as if you were doing short multiplication. Carry any extra digits if needed and ensure to add them to the next number.

```
  2 1 7
x   5 9
-------
  1 9 5 3   (217 x 9)
1 0 8 5 0   (217 x 50)
-------
1 2 8 0 3
```

## Step 2

Add a zero below the ones digit, this is going to make our tens multiplier into a tens instead of a unit value.

## Step 3

Then multiply your top number by your tens multiplier, starting with your units and working your way along like normal.

## Step 4

Once you have worked out both multiplications, add the answers together.

```
  3 4 2 5
x     4 7
-------

  5 0 8 3
x     9 6
-------

  6 5 0 2
x     8 9
-------

  9 4 6 7
x     3 4
-------
```

# Long Multiplication Answers

## Step 1

Set our your multiplication in the formal method. Multiply the top ones digit by the ones multiplier as if you were doing short multiplication. Carry any extra digits if needed and ensure to add them to the next number.

| | | | |
|---|---|---|---|
| | 2 | 1 | 7 |
| x | | 5 | 9 |
| 1 | 9 | 5 | 3 |
| 1 | 0 | 8 | 5 | 0 |
| 1 | 2 | 8 | 0 | 3 |

(217 x 9)

(217 x 50)

## Step 2

Add a zero below the ones digit, this is going to make our tens multiplier into a tens instead of a unit value.

## Step 3

Then multiply your top number by your tens multiplier, starting with your units and working your way along like normal.

## Step 4

Once you have worked out both multiplications, add the answers together.

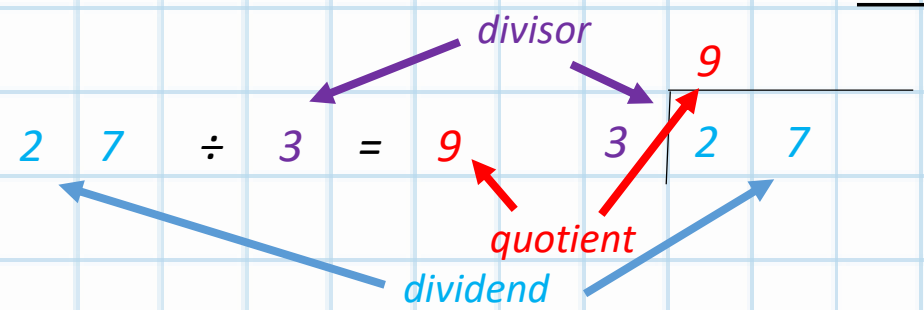
| | | | | |
|---|---|---|---|---|
| | 3 | 4 | 2 | 5 |
| x | | | 4 | 7 |
| 2 | 3 | 9 | 7 | 5 |
| 1 | 3 | 7 | 0 | 0 |
| 1 | 6 | 0 | 9 | 7 | 5 |

| | | | | |
|---|---|---|---|---|
| | 6 | 5 | 0 | 2 |
| x | | | 8 | 9 |
| 5 | 8 | 5 | 1 | 8 |
| 5 | 2 | 0 | 1 | 6 | 0 |
| 5 | 7 | 8 | 6 | 7 | 8 |

| | | | | |
|---|---|---|---|---|
| | 5 | 0 | 8 | 3 |
| x | | | 9 | 6 |
| 3 | 0 | 4 | 9 | 8 |
| 4 | 5 | 7 | 4 | 7 | 0 |
| 4 | 8 | 7 | 9 | 6 | 8 |

| | | | | |
|---|---|---|---|---|
| | 9 | 4 | 6 | 7 |
| x | | | 3 | 4 |
| 3 | 7 | 8 | 6 | 8 |
| 2 | 8 | 4 | 0 | 1 | 0 |
| 3 | 2 | 1 | 8 | 7 | 8 |

# Short Division




## Step 1

Set our your division in the formal method. Placing the dividend (number you're dividing) inside the grid and the divisor (number you're dividing it by) on the outside.

| | | | |
|---|---|---|---|
| 3 | 4 | 3 | 6 |

## Step 2

Starting from the left, see how many times the divisor will go into each digit of the dividend. Any remainders move to the next digit.

| | | | |
|---|---|---|---|
| | 1 | 4 | 5 |
| 3 | 4 | $^{1}3$ | $^{1}6$ |

## Step 3

When you reach the last digit, any remainders are written after an 'r'.

| | | | |
|---|---|---|---|
| | 1 | 4 | 5 r1 |
| 3 | 4 | $^{1}3$ | $^{1}6$ |

| | | | | |
|---|---|---|---|---|
| 6 | 2 | 9 | 8 | 5 |

| | | | | |
|---|---|---|---|---|
| 4 | 8 | 3 | 2 | 7 |

| | | | | |
|---|---|---|---|---|
| 9 | 3 | 5 | 3 | 8 |

| | | | | |
|---|---|---|---|---|
| 8 | 7 | 1 | 9 | 5 |

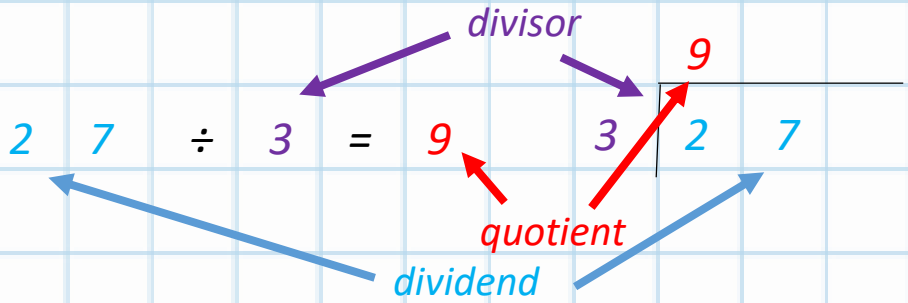
| | | | | |
|---|---|---|---|---|
| 3 | 7 | 8 | 4 | 6 |

| | | | | |
|---|---|---|---|---|
| 7 | 9 | 3 | 5 | 2 |

| | | | | |
|---|---|---|---|---|
| 7 | 6 | 0 | 8 | 1 |

| | | | | |
|---|---|---|---|---|
| 6 | 5 | 8 | 0 | 7 |

# Short Division **Answers**




## Step 1

Set our your division in the formal method. Placing the dividend (number you're dividing) inside the grid and the divisor (number you're dividing it by) on the outside.

| | | | |
|---|---|---|---|
| 3 | 4 | 3 | 6 |

## Step 2

Starting from the left, see how many times the divisor will go into each digit of the dividend. Any remainders move to the next digit.

| | | | |
|---|---|---|---|
| | 1 | 4 | 5 |
| 3 | 4 | $^{1}3$ | $^{1}6$ |

## Step 3

When you reach the last digit, any remainders are written after an 'r'.

| | | | |
|---|---|---|---|
| | 1 | 4 | 5 r1 |
| 3 | 4 | $^{1}3$ | $^{1}6$ |

| | | | | |
|---|---|---|---|---|
| | 4 | 9 | 7 | r3 |
| 6 | 2 | 9 | 8 | 5 |

| | | | | |
|---|---|---|---|---|
| | 2 | 0 | 8 | 1 r3 |
| 4 | 8 | 3 | 2 | 7 |

| | | | | |
|---|---|---|---|---|
| | 3 | 9 | 3 | r1 |
| 9 | 3 | 5 | 3 | 8 |

| | | | | |
|---|---|---|---|---|
| | 8 | 9 | 9 | r3 |
| 8 | 7 | 1 | 9 | 5 |

| | | | | |
|---|---|---|---|---|
| | 2 | 6 | 1 | 5 r1 |
| 3 | 7 | 8 | 4 | 6 |

| | | | | |
|---|---|---|---|---|
| | 1 | 3 | 3 | 6 |
| 7 | 9 | 3 | 5 | 2 |

| | | | | |
|---|---|---|---|---|
| | 8 | 6 | 8 | r5 |
| 7 | 6 | 0 | 8 | 1 |

| | | | | |
|---|---|---|---|---|
| | 9 | 6 | 7 | r5 |
| 6 | 5 | 8 | 0 | 7 |

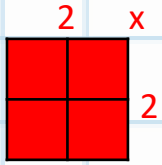
# Square Numbers & Cube Numbers

## Step 1

A square number is a number multiplied by itself. It is written as a small 2 after the number.

For example:

$2^2 = 2 \times 2 = 4$

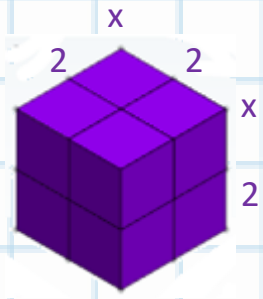



## Step 2

A cube number is a number multiplied by itself, and then by itself again. It is written as a small 3 after the number.

For example:

$2^3 = 2 \times 2 \times 2 = 8$




| Question | Answer |
|---|---|
| $1^2$ | |
| $2^2$ | |
| $3^2$ | |
| $4^2$ | |
| $5^2$ | |
| $6^2$ | |
| $7^2$ | |
| $8^2$ | |
| $9^2$ | |
| $10^2$ | |
| $11^2$ | |
| $12^2$ | |

| Question | Answer |
|---|---|
| $1^3$ | |
| $2^3$ | |
| $3^3$ | |
| $4^3$ | |
| $5^3$ | |
| $6^3$ | |
| $7^3$ | |
| $8^3$ | |
| $9^3$ | |
| $10^3$ | |
| $11^3$ | |
| $12^3$ | |

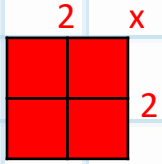
# Square Numbers & Cube Numbers **Answers**

## Step 1

A square number is a number multiplied by itself. It is written as a small 2 after the number.

For example:

$2^2 = 2 \times 2 = 4$

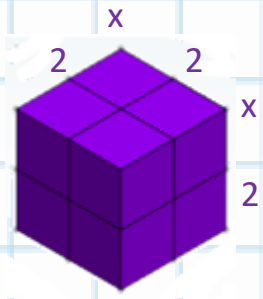



## Step 2

A cube number is a number multiplied by itself, and then by itself again. It is written as a small 3 after the number.

For example:

$2^3 = 2 \times 2 \times 2 = 8$




| Question | Answer |
|---|---|
| $1^2$ | 1 |
| $2^2$ | 4 |
| $3^2$ | 9 |
| $4^2$ | 16 |
| $5^2$ | 25 |
| $6^2$ | 36 |
| $7^2$ | 49 |
| $8^2$ | 64 |
| $9^2$ | 81 |
| $10^2$ | 100 |
| $11^2$ | 121 |
| $12^2$ | 144 |

| Question | Answer |
|---|---|
| $1^3$ | 1 |
| $2^3$ | 8 |
| $3^3$ | 27 |
| $4^3$ | 64 |
| $5^3$ | 125 |
| $6^3$ | 216 |
| $7^3$ | 343 |
| $8^3$ | 512 |
| $9^3$ | 729 |
| $10^3$ | 1000 |
| $11^3$ | 1331 |
| $12^3$ | 1728 |

# Multiply by 10, 100 or 1000

## Step 1
Lay out the number, include the place value headings if it helps you.

## Step 2
Work out the number of places the digit needs to move. The number of zeros in the multiplier will help you.
10 = 1 zero = 1 place
100 = 2 zeros = 2 places
1000 = 3 zeros = 3 places

## Step 3
Move each digit the number of places to the left, adding zeroes as place holders where necessary.

| Th | H | T | U | $^1/_{10}$ | $^1/_{100}$ | $^1/_{1000}$ | |
|---|---|---|---|---|---|---|---|
| | | | 7 | 2 | 1 | | 7.21 x 10<br>Makes the number 10 times bigger. Move each digit 1 place to the left. |
| | | 7 | 2 | 1 | | | |

| Th | H | T | U | $^1/_{10}$ | $^1/_{100}$ | $^1/_{1000}$ | |
|---|---|---|---|---|---|---|---|
| | | | 7 | 2 | 1 | | 7.21 x 100<br>Makes the number 100 times bigger. Move each digit 2 places to the left. |
| | 7 | 2 | 1 | | | | |

| Th | H | T | U | $^1/_{10}$ | $^1/_{100}$ | $^1/_{1000}$ | |
|---|---|---|---|---|---|---|---|
| | | | 7 | 2 | 1 | | 7.21 x 1000<br>Makes the number 1000 times bigger. Move each digit 3 places to the left. |
| 7 | 2 | 1 | 0 | | | | |

| | X 10 | X 100 | X 1000 |
|---|---|---|---|
| **46** | | | |
| **7.2** | | | |
| **10.6** | | | |
| **6.98** | | | |
| **17.613** | | | |
| **108.1** | | | |
| **87.091** | | | |
| **471** | | | |
| **19.08** | | | |
| **3.928** | | | |
| **60.07** | | | |

# Multiply by 10, 100 or 1000 **Answers**



## Step 1

Lay out the number, include the place value headings if it helps you.

## Step 2

Work out the number of places the digit needs to move. The number of zeros in the multiplier will help you.

10 = 1 zero = 1 place

100 = 2 zeros = 2 places

1000 = 3 zeros = 3 places

## Step 3

Move each digit the number of places to the left, adding zeroes as place holders where necessary.

| Th | H | T | U | $^1/_{10}$ | $^1/_{100}$ | $^1/_{1000}$ | |
|---|---|---|---|---|---|---|---|
| | | | 7 | 2 | 1 | | 7.21 x 10<br>Makes the number 10 times bigger. Move each digit 1 place to the left. |
| | | 7 | 2 | 1 | | | |

| Th | H | T | U | $^1/_{10}$ | $^1/_{100}$ | $^1/_{1000}$ | |
|---|---|---|---|---|---|---|---|
| | | | 7 | 2 | 1 | | 7.21 x 100<br>Makes the number 100 times bigger. Move each digit 2 places to the left. |
| | 7 | 2 | 1 | | | | |

| Th | H | T | U | $^1/_{10}$ | $^1/_{100}$ | $^1/_{1000}$ | |
|---|---|---|---|---|---|---|---|
| | | | 7 | 2 | 1 | | 7.21 x 1000<br>Makes the number 1000 times bigger. Move each digit 3 places to the left. |
| 7 | 2 | 1 | 0 | | | | |

| | X 10 | X 100 | X 1000 |
|---|---|---|---|
| **46** | 460 | 4600 | 46,000 |
| **7.2** | 72 | 720 | 7200 |
| **10.6** | 106 | 1060 | 10,600 |
| **6.98** | 69.8 | 698 | 6980 |
| **17.613** | 176.13 | 1761.3 | 17,613 |
| **108.1** | 1081 | 10,810 | 108,100 |
| **87.091** | 870.91 | 8709.1 | 87,091 |
| **471** | 4710 | 47,100 | 471,000 |
| **19.08** | 190.8 | 1908 | 19,080 |
| **3.928** | 39.28 | 392.8 | 3928 |
| **60.07** | 600.7 | 6007 | 60,070 |

# Divide by 10, 100 or 1000

## Step 1

Lay out the number, include the place value headings if it helps you.

## Step 2

Work out the number of places the digit needs to move. The number of zeros in the divisor will help you.
10 = 1 zero = 1 place
100 = 2 zeros = 2 places
1000 = 3 zeros = 3 places

## Step 3

Move each digit the number of places to the right, adding zeroes as place holders where necessary.

| Th | H | T | U | $^1/_{10}$ | $^1/_{100}$ | $^1/_{1000}$ | |
|---|---|---|---|---|---|---|---|
| | 7 | 2 | 1 | | | | 721 ÷ 10<br>Makes the number 10 times smaller. Move each digit 1 place to the right. |
| | | 7 | 2 | 1 | | | |

| Th | H | T | U | $^1/_{10}$ | $^1/_{100}$ | $^1/_{1000}$ | |
|---|---|---|---|---|---|---|---|
| | 7 | 2 | 1 | | | | 721 ÷ 100<br>Makes the number 100 times smaller. Move each digit 2 places to the right. |
| | | | 7 | 2 | 1 | | |

| Th | H | T | U | $^1/_{10}$ | $^1/_{100}$ | $^1/_{1000}$ | |
|---|---|---|---|---|---|---|---|
| | 7 | 2 | 1 | | | | 721 ÷ 1000<br>Makes the number 1000 times smaller. Move each digit 3 places to the right. |
| | | | 0 | 7 | 2 | 1 | |

| | ÷ 10 | ÷ 100 | ÷ 1000 |
|---|---|---|---|
| **781** | | | |
| **9183** | | | |
| **2** | | | |
| **18.9** | | | |
| **319.6** | | | |
| **37** | | | |
| **1938.3** | | | |
| **2819** | | | |
| **572** | | | |
| **38.39** | | | |
| **423.2** | | | |

# Divide by 10, 100 or 1000 Answers

## Step 1
Lay out the number, include the place value headings if it helps you.

## Step 2
Work out the number of places the digit needs to move. The number of zeros in the divisor will help you.
10 = 1 zero = 1 place
100 = 2 zeros = 2 places
1000 = 3 zeros = 3 places

## Step 3
Move each digit the number of places to the right, adding zeroes as place holders where necessary.

| Th | H | T | U ● | $^1/_{10}$ | $^1/_{100}$ | $^1/_{1000}$ | |
|---|---|---|---|---|---|---|---|
| | 7 | 2 | 1 | | | | 721 ÷ 10<br>Makes the number 10 times smaller. Move each digit 1 place to the right. |
| | | 7 | 2 ● | 1 | | | |

| Th | H | T | U ● | $^1/_{10}$ | $^1/_{100}$ | $^1/_{1000}$ | |
|---|---|---|---|---|---|---|---|
| | 7 | 2 | 1 | | | | 721 ÷ 100<br>Makes the number 100 times smaller. Move each digit 2 places to the right. |
| | | | 7 ● | 2 | 1 | | |

| Th | H | T | U ● | $^1/_{10}$ | $^1/_{100}$ | $^1/_{1000}$ | |
|---|---|---|---|---|---|---|---|
| | 7 | 2 | 1 | | | | 721 ÷ 1000<br>Makes the number 1000 times smaller. Move each digit 3 places to the right. |
| | | | 0 ● | 7 | 2 | 1 | |

| | ÷ 10 | ÷ 100 | ÷ 1000 |
|---|---|---|---|
| **781** | 78.1 | 7.81 | 0.781 |
| **9183** | 918.3 | 91.83 | 9.183 |
| **2** | 0.2 | 0.02 | 0.002 |
| **18.9** | 1.89 | 0.189 | 0.0189 |
| **319.6** | 31.96 | 3.196 | 0.3196 |
| **37** | 3.7 | 0.37 | 0.037 |
| **1938.3** | 193.83 | 19.383 | 1.9383 |
| **2819** | 281.9 | 28.19 | 2.189 |
| **572** | 57.2 | 5.72 | 0.572 |
| **38.39** | 3.839 | 0.3839 | 0.03839 |
| **423.2** | 42.32 | 4.232 | 0.4232 |

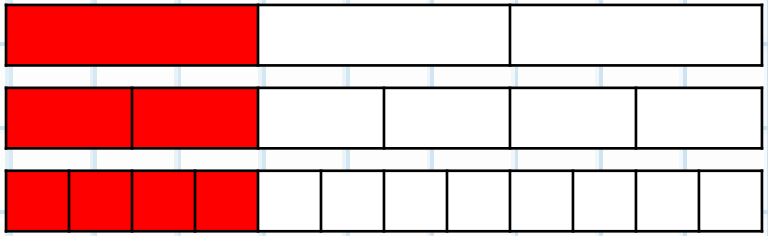
# Equivalent Fractions

Year 5 Maths
@miss_teasel

## Step 1

Equivalent fractions are fractions worth the same amount, but are written in different terms.

For example:



$\frac{1}{3}$

$\frac{2}{6}$

$\frac{4}{12}$

## Step 2

To find an equivalent fraction, you find a pattern between either the numerators or denominators that have been given.

$\frac{1}{3} = \frac{\quad}{21}$ (X 7)

$\frac{18}{20} = \frac{9}{\quad}$ (÷ 2)

## Step 3

Whatever the pattern is for the denominator/numerator, is the same for the missing part.

"Whatever we do to the top, we do to the bottom" and vice versa.

$\frac{1}{3} = \frac{7}{21}$ (X 7)

$\frac{18}{20} = \frac{9}{10}$ (÷ 2)

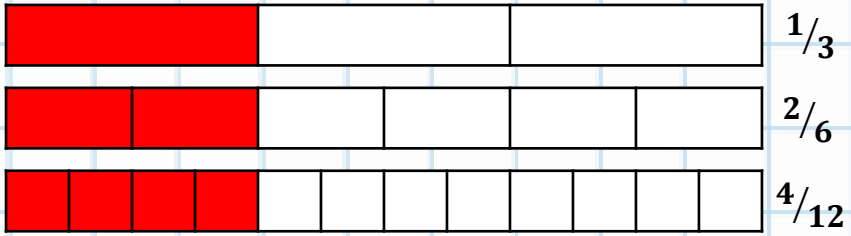
| Original | Equivalent | Equivalent |
|---|---|---|
| $\frac{2}{5}$ | $\frac{}{10}$ | $\frac{}{25}$ |
| $\frac{12}{20}$ | $\frac{3}{}$ | $\frac{}{10}$ |
| $\frac{4}{16}$ | $\frac{}{4}$ | $\frac{8}{}$ |
| $\frac{6}{10}$ | $\frac{}{5}$ | $\frac{9}{}$ |
| $\frac{3}{4}$ | $\frac{}{20}$ | $\frac{12}{}$ |
| $\frac{1}{2}$ | $\frac{}{50}$ | $\frac{13}{}$ |
| $\frac{1}{5}$ | $\frac{4}{}$ | $\frac{}{55}$ |
| $\frac{16}{30}$ | $\frac{8}{}$ | $\frac{}{300}$ |
| $\frac{3}{9}$ | $\frac{1}{}$ | $\frac{6}{}$ |
| $\frac{6}{8}$ | $\frac{}{4}$ | $\frac{}{36}$ |
| $\frac{2}{14}$ | $\frac{1}{}$ | $\frac{}{21}$ |
| $\frac{30}{50}$ | $\frac{3}{}$ | $\frac{}{30}$ |
| $\frac{86}{100}$ | $\frac{}{50}$ | $\frac{860}{}$ |

# Equivalent Fractions Answers

## Step 1

Equivalent fractions are fractions worth the same amount, but are written in different terms.

For example:




## Step 2

To find an equivalent fraction, you find a pattern between either the numerators or denominators that have been given.

$1/3 = /21$ (X 7)

$18/20 = 9/$ (÷ 2)

## Step 3

Whatever the pattern is for the denominator/numerator, is the same for the missing part.

"Whatever we do to the top, we do to the bottom" and vice versa.

$1/3 = 7/21$ (X 7)

$18/20 = 9/10$ (÷ 2)

| Original | Equivalent | Equivalent |
|---|---|---|
| $2/5$ | $4/10$ | $10/25$ |
| $12/20$ | $3/5$ | $6/10$ |
| $4/16$ | $1/4$ | $8/32$ |
| $6/10$ | $3/5$ | $9/15$ |
| $3/4$ | $15/20$ | $12/16$ |
| $1/2$ | $25/50$ | $13/26$ |
| $1/5$ | $4/20$ | $11/55$ |
| $16/30$ | $8/15$ | $160/300$ |
| $3/9$ | $1/3$ | $6/18$ |
| $6/8$ | $3/4$ | $27/36$ |
| $2/14$ | $1/7$ | $3/21$ |
| $30/50$ | $3/5$ | $18/30$ |
| $86/100$ | $43/50$ | $860/1000$ |

# Compare & Order Fractions

## Step 1

Convert all fractions into equivalent fractions, this will make it the easiest to compare and/or order them.

$\frac{1}{3}$ (X 6) → $\frac{6}{18}$ $\quad$ $\frac{5}{6}$ (X 3) → $\frac{15}{18}$ $\quad$ $\frac{4}{9}$ (X 2) → $\frac{8}{18}$


## Step 2 - Ordering

Once converted into equivalent fractions, look at the numerators (top number) which will tell you the order to put them in. Convert them back to their original fractions.

**Smallest to Largest**

$\frac{6}{18}$ , $\frac{8}{18}$ , $\frac{15}{18}$ $\quad$ In the original fractions: $\quad$ $\frac{1}{3}$ , $\frac{4}{9}$ , $\frac{5}{6}$

**Largest to Smallest**

$\frac{15}{18}$ , $\frac{8}{18}$ , $\frac{6}{18}$ $\quad$ In the original fractions: $\quad$ $\frac{5}{6}$ , $\frac{4}{9}$ , $\frac{1}{3}$

## Step 3 - Comparing

To compare, again, look at the numerators (top number) to tell you which symbol to use. Remember to write them in their original fraction.

$\frac{6}{18} < \frac{8}{18}$ $\quad$ In the original fractions: $\quad$ $\frac{1}{3} < \frac{4}{9}$

$\frac{15}{18} > \frac{6}{18}$ $\quad$ In the original fractions: $\quad$ $\frac{5}{6} > \frac{1}{3}$

Put the following fractions in **ascending order**

| | | |
|---|---|---|
| $\frac{8}{10}$ | $\frac{12}{20}$ | $\frac{2}{5}$ |
| | | |

| | | |
|---|---|---|
| $\frac{2}{3}$ | $\frac{7}{12}$ | $\frac{3}{4}$ |
| | | |

Put the following fractions in **descending order**

| | | |
|---|---|---|
| $\frac{3}{6}$ | $\frac{5}{9}$ | $\frac{2}{3}$ |
| | | |

| | | |
|---|---|---|
| $\frac{2}{5}$ | $\frac{1}{2}$ | $\frac{3}{10}$ |
| | | |

Use >, < or = to compare these fractions.

| | | |
|---|---|---|
| $\frac{2}{5}$ | | $\frac{1}{2}$ |
| $\frac{5}{7}$ | | $\frac{2}{3}$ |
| $\frac{8}{10}$ | | $\frac{4}{5}$ |

# Compare & Order Fractions **Answers**

## Step 1

Convert all fractions into equivalent fractions, this will make it the easiest to compare and/or order them.

$\frac{1}{3}$ X 6 $\frac{6}{18}$ $\quad$ $\frac{5}{6}$ X 3 $\frac{15}{18}$ $\quad$ $\frac{4}{9}$ X 2 $\frac{8}{18}$


## Step 2 - Ordering

Once converted into equivalent fractions, look at the numerators (top number) which will tell you the order to put them in. Convert them back to their original fractions.

**Smallest to Largest**

$\frac{6}{18}$ , $\frac{8}{18}$ , $\frac{15}{18}$ $\quad$ In the original fractions: $\quad$ $\frac{1}{3}$ , $\frac{4}{9}$ , $\frac{5}{6}$

**Largest to Smallest**

$\frac{15}{18}$ , $\frac{8}{18}$ , $\frac{6}{18}$ $\quad$ In the original fractions: $\quad$ $\frac{5}{6}$ , $\frac{4}{9}$ , $\frac{1}{3}$

## Step 3 - Comparing

To compare, again, look at the numerators (top number) to tell you which symbol to use. Remember to write them in their original fraction.

$\frac{6}{18} < \frac{8}{18}$ $\quad$ In the original fractions: $\quad$ $\frac{1}{3} < \frac{4}{9}$

$\frac{15}{18} > \frac{6}{18}$ $\quad$ In the original fractions: $\quad$ $\frac{5}{6} > \frac{1}{3}$

Put the following fractions in **ascending order**

| | | |
|---|---|---|
| $\frac{8}{10}$ | $\frac{12}{20}$ | $\frac{2}{5}$ |
| $\frac{2}{5}$ | $\frac{12}{20}$ | $\frac{8}{10}$ |
| $\frac{2}{3}$ | $\frac{7}{12}$ | $\frac{3}{4}$ |
| $\frac{7}{12}$ | $\frac{2}{3}$ | $\frac{3}{4}$ |

Put the following fractions in **descending order**

| | | |
|---|---|---|
| $\frac{3}{6}$ | $\frac{5}{9}$ | $\frac{2}{3}$ |
| $\frac{2}{3}$ | $\frac{5}{9}$ | $\frac{3}{6}$ |
| $\frac{2}{5}$ | $\frac{1}{2}$ | $\frac{3}{10}$ |
| $\frac{1}{2}$ | $\frac{2}{5}$ | $\frac{3}{10}$ |

Use >, < or = to compare these fractions.

| | | |
|---|---|---|
| $\frac{2}{5}$ | < | $\frac{1}{2}$ |
| $\frac{5}{7}$ | > | $\frac{2}{3}$ |
| $\frac{8}{10}$ | = | $\frac{4}{5}$ |

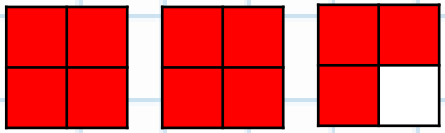
# Converting Improper Fractions To Mixed Numbers



## Step 1

An improper fraction is a fraction where the numerator (top number) is bigger than the denominator (bottom number).

$^{11}/_{4}$



## Step 2

The denominator tells us how many pieces make 1 whole. If we divide the numerator by the denominator we will know how many wholes we have.

11 ÷ 4 = 2 r3

We can make 2 wholes.

## Step 3

The remainder is our fraction part of our mixed number.

So r3 becomes $^{3}/_{4}$

## Step 4

Our final answer is our whole number and fraction together.

$^{11}/_{4}$ = 2 $^{3}/_{4}$

| Improper Fraction | Mixed Number |
|---|---|
| $^{11}/_{4}$ | |
| $^{8}/_{5}$ | |
| $^{10}/_{3}$ | |
| $^{23}/_{6}$ | |
| $^{34}/_{8}$ | |
| $^{11}/_{10}$ | |
| $^{30}/_{9}$ | |
| $^{7}/_{2}$ | |
| $^{31}/_{4}$ | |
| $^{69}/_{7}$ | |
| $^{18}/_{5}$ | |
| $^{19}/_{6}$ | |
| $^{52}/_{11}$ | |

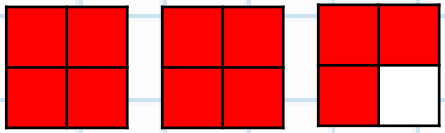
# Converting Improper Fractions To Mixed Numbers Answers



## Step 1

An improper fraction is a fraction where the numerator (top number) is bigger than the denominator (bottom number).

$^{11}/_{4}$



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## Step 3

The remainder is our fraction part of our mixed number.

So r3 becomes $^{3}/_{4}$

## Step 4

Our final answer is our whole number and fraction together.

$^{11}/_{4}$ = 2 $^{3}/_{4}$

| Improper Fraction | Mixed Number |
|---|---|
| $^{11}/_{4}$ | $2\ ^{3}/_{4}$ |
| $^{8}/_{5}$ | $1\ ^{3}/_{5}$ |
| $^{10}/_{3}$ | $3\ ^{1}/_{3}$ |
| $^{23}/_{6}$ | $3\ ^{5}/_{6}$ |
| $^{34}/_{8}$ | $4\ ^{2}/_{8}$ |
| $^{11}/_{10}$ | $1\ ^{1}/_{10}$ |
| $^{30}/_{9}$ | $3\ ^{3}/_{9}$ |
| $^{7}/_{2}$ | $3\ ^{1}/_{2}$ |
| $^{31}/_{4}$ | $7\ ^{3}/_{4}$ |
| $^{69}/_{7}$ | $9\ ^{6}/_{7}$ |
| $^{18}/_{5}$ | $3\ ^{3}/_{5}$ |
| $^{19}/_{6}$ | $3\ ^{1}/_{6}$ |
| $^{52}/_{11}$ | $4\ ^{8}/_{11}$ |

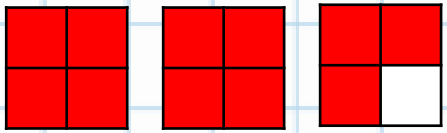
# Converting Mixed Numbers to Improper Fractions



## Step 1

A mixed number is a combination of whole numbers and fractions.

$2\ \frac{3}{4}$



## Step 2

Multiply the denominator (bottom number) by the whole number. This will tell you how many (numerator) for the whole number.

$4 \times 2 = 8$

## Step 3

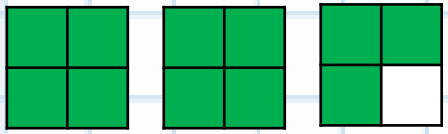
Add the numerator of your fraction to your answer. This will give your total numerator.

$8 + 3 = 11$

## Step 4

Write your answer as a numerator over the existing denominator.

$\frac{11}{4}$



$\frac{4}{4} + \frac{4}{4} + \frac{3}{4}$

| Mixed Number | Improper Fraction |
|---|---|
| $1\ \frac{5}{6}$ | |
| $3\ \frac{1}{4}$ | |
| $1\ \frac{3}{7}$ | |
| $2\ \frac{2}{4}$ | |
| $5\ \frac{1}{3}$ | |
| $3\ \frac{2}{5}$ | |
| $2\ \frac{4}{5}$ | |
| $4\ \frac{3}{4}$ | |
| $3\ \frac{1}{3}$ | |
| $3\ \frac{6}{8}$ | |
| $8\ \frac{2}{6}$ | |
| $5\ \frac{6}{7}$ | |
| $4\ \frac{3}{9}$ | |

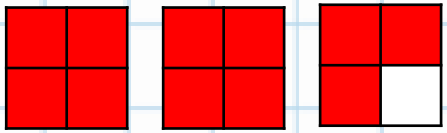
# Converting Mixed Numbers to Improper Fractions Answers



## Step 1

A mixed number is a combination of whole numbers and fractions.

$2\ {}^{3}/_{4}$



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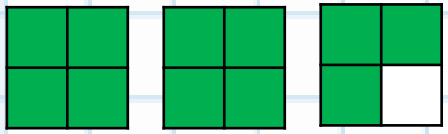
## Step 4

Write your answer as a numerator over the existing denominator.

$11/4$



$4/4 + 4/4 + 3/4$

| Mixed Number | Improper Fraction |
|---|---|
| $1\ {}^{5}/_{6}$ | $11/6$ |
| $3\ {}^{1}/_{4}$ | $13/4$ |
| $1\ {}^{3}/_{7}$ | $10/7$ |
| $2\ {}^{2}/_{4}$ | $10/4$ |
| $5\ {}^{1}/_{3}$ | $16/3$ |
| $3\ {}^{2}/_{5}$ | $17/5$ |
| $2\ {}^{4}/_{5}$ | $14/5$ |
| $4\ {}^{3}/_{4}$ | $19/4$ |
| $3\ {}^{1}/_{3}$ | $10/3$ |
| $3\ {}^{6}/_{8}$ | $30/8$ |
| $8\ {}^{2}/_{6}$ | $50/6$ |
| $5\ {}^{6}/_{7}$ | $41/7$ |
| $4\ {}^{3}/_{9}$ | $39/9$ |

# Adding Fractions

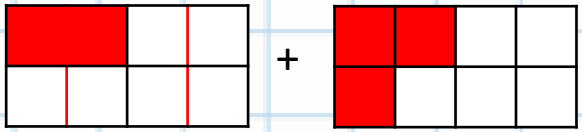
## Step 1

Convert both fractions to the same denominator by finding equivalent fractions.

x2

$^{1}/_{4} + {}^{3}/_{8} = {}^{2}/_{8} + {}^{3}/_{8}$

x2



## Step 2

Add the numerators together ***but not the denominators.***

$^{2}/_{8} + {}^{3}/_{8} = {}^{5}/_{8}$

## Step 3

Simplify the answer if you can.

$^{5}/_{8}$ cannot be simplified as the only factor they share is 1.

**However:**

$^{12}/_{20}$ the example answer can be simplified.

$$\overset{\div 4}{{}^{12}/_{20}} = \underset{\div 4}{{}^{3}/_{5}}$$

| | Convert Question to Same Denominator | Answer |
|---|---|---|
| $^{1}/_{4} + {}^{7}/_{20} =$ | (x5) $^{5}/_{20} + {}^{7}/_{20} =$ | $= {}^{12}/_{20}$ or $^{3}/_{5}$ |
| $^{1}/_{3} + {}^{1}/_{6} =$ | | |
| $^{1}/_{3} + {}^{2}/_{9} =$ | | |
| $^{5}/_{8} + {}^{1}/_{4} =$ | | |
| $^{3}/_{5} + {}^{1}/_{10} =$ | | |
| $^{7}/_{15} + {}^{1}/_{5} =$ | | |
| $^{2}/_{3} + {}^{5}/_{24} =$ | | |
| $\mathbf{^{3}/_{5}} + \mathbf{^{1}/_{4}} =$ | | |
| $^{1}/_{2} + \mathbf{^{2}/_{5}} =$ | | |
| $\mathbf{^{2}/_{3}} + {}^{1}/_{4} =$ | | |
| $\mathbf{^{3}/_{5}} + \mathbf{^{3}/_{8}} =$ | | |
| $^{3}/_{8} + \mathbf{^{2}/_{7}} =$ | | |
| $\mathbf{^{5}/_{11}} + \mathbf{^{3}/_{7}} =$ | | |

# Adding Fractions **Answers**

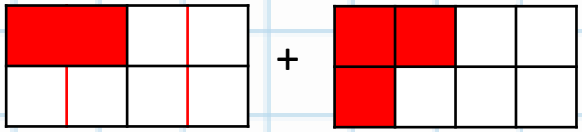
## Step 1

Convert both fractions to the same denominator by finding equivalent fractions. Sometimes you may need to change **both** fractions.

x2

$\frac{1}{4} + \frac{3}{8} = \frac{2}{8} + \frac{3}{8}$

x2



## Step 2

Add the numerators together ***but not the denominators.***

$\frac{2}{8} + \frac{3}{8} = \frac{5}{8}$

## Step 3

Simplify the answer if you can.

$\frac{5}{8}$ cannot be simplified as the only factor they share is 1.

**However:**

$\frac{12}{20}$ the example answer can be simplified.

÷4

$\frac{12}{20} = \frac{3}{5}$

÷4

| | Answer | Simplified |
|---|---|---|
| $\frac{1}{4} + \frac{7}{20} =$ | (x5) $\frac{5}{20} + \frac{7}{20} =$ | $= \frac{12}{20}$ or $\frac{3}{5}$ |
| $\frac{1}{3} + \frac{1}{6} =$ | $= \frac{3}{6}$ | $= \frac{1}{2}$ |
| $\frac{1}{3} + \frac{2}{9} =$ | $= \frac{5}{9}$ | |
| $\frac{5}{8} + \frac{1}{4} =$ | $= \frac{7}{8}$ | |
| $\frac{3}{5} + \frac{1}{10} =$ | $= \frac{7}{10}$ | |
| $\frac{7}{15} + \frac{1}{5} =$ | $= \frac{10}{15}$ | $= \frac{2}{5}$ |
| $\frac{2}{3} + \frac{5}{24} =$ | $= \frac{21}{24}$ | $= \frac{7}{8}$ |
| $\frac{3}{5} + \frac{1}{4} =$ | $= \frac{17}{20}$ | |
| $\frac{1}{2} + \frac{2}{5} =$ | $= \frac{9}{10}$ | |
| $\frac{2}{3} + \frac{1}{4} =$ | $= \frac{11}{12}$ | |
| $\frac{3}{5} + \frac{3}{8} =$ | $= \frac{39}{40}$ | |
| $\frac{3}{8} + \frac{2}{7} =$ | $= \frac{37}{56}$ | |
| $\frac{5}{11} + \frac{3}{7} =$ | $= \frac{68}{77}$ | |

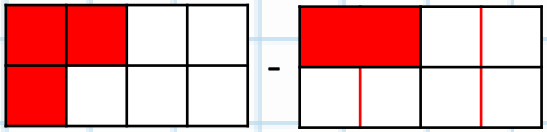
# Subtracting Fractions

## Step 1

Convert both fractions to the same denominator by finding equivalent fractions.

$$\frac{3}{8} - \frac{1}{4} = \frac{3}{8} - \frac{2}{8}$$

(x2 above $\frac{1}{4}$, x2 below $\frac{1}{4}$)



## Step 2

Subtract the numerators, ***but not the denominators.***

$$\frac{3}{8} - \frac{2}{8} = \frac{1}{8}$$

## Step 3

Simplify the answer if you can.

$\frac{1}{8}$ cannot be simplified as it is a unit fraction (numerator of 1).

**However:**

$\frac{2}{6}$ the example answer can be simplified.

$$\frac{2}{6} \overset{\div 2}{\underset{\div 2}{}} = \frac{1}{6}$$

| | Convert Question to Same Denominator | Answer |
|---|---|---|
| $\frac{5}{6} - \frac{1}{2} =$ | (x3) $\frac{5}{6} - \frac{3}{6} =$ | $= \frac{2}{6}$ or $\frac{1}{3}$ |
| $\frac{6}{8} - \frac{1}{2} =$ | | |
| $\frac{1}{2} - \frac{1}{6} =$ | | |
| $\frac{9}{16} - \frac{1}{4} =$ | | |
| $\frac{2}{5} - \frac{3}{10} =$ | | |
| $\frac{3}{8} - \frac{5}{24} =$ | | |
| $\frac{6}{7} - \frac{5}{14} =$ | | |
| $\frac{3}{4} - \frac{5}{12} =$ | | |
| $\frac{2}{3} - \frac{4}{9} =$ | | |
| $\frac{7}{8} - \frac{1}{2} =$ | | |
| $\frac{5}{6} - \frac{1}{5} =$ | | |
| $\frac{1}{3} - \frac{1}{4} =$ | | |
| $\frac{2}{5} - \frac{1}{8} =$ | | |

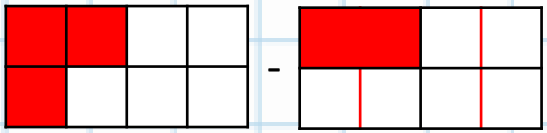
# Subtracting Fractions Answers



## Step 1

Convert both fractions to the same denominator by finding equivalent fractions.

$\frac{3}{8} - \frac{1}{4} = \frac{3}{8} - \frac{2}{8}$ (x2 above $\frac{1}{4}$, x2 below $\frac{1}{4}$)



-



## Step 2

Subtract the numerators, ***but not the denominators.***

$\frac{3}{8} - \frac{2}{8} = \frac{1}{8}$

## Step 3

Simplify the answer if you can.

$\frac{1}{8}$ cannot be simplified as it is a unit fraction (numerator of 1).

**However:**

$\frac{2}{6}$ the example answer can be simplified.

$\frac{2}{6} \overset{\div 2}{\underset{\div 2}{}} = \frac{1}{6}$

| | Answer | Simplified |
|---|---|---|
| $\frac{5}{6} - \frac{1}{2} =$ | (x3) $\frac{5}{6} - \frac{3}{6} =$ | $= \frac{2}{6}$ or $\frac{1}{3}$ |
| $\frac{6}{8} - \frac{1}{2} =$ | $= \frac{2}{8}$ | $= \frac{1}{4}$ |
| $\frac{1}{2} - \frac{1}{6} =$ | $= \frac{2}{6}$ | $= \frac{1}{3}$ |
| $\frac{9}{16} - \frac{1}{4} =$ | $= \frac{5}{16}$ | |
| $\frac{2}{5} - \frac{3}{10} =$ | $= \frac{1}{10}$ | |
| $\frac{3}{8} - \frac{5}{24} =$ | $= \frac{4}{24}$ | $= \frac{1}{6}$ |
| $\frac{6}{7} - \frac{5}{14} =$ | $= \frac{7}{14}$ | $= \frac{1}{2}$ |
| $\frac{3}{4} - \frac{5}{12} =$ | $= \frac{4}{12}$ | $= \frac{1}{3}$ |
| $\frac{2}{3} - \frac{4}{9} =$ | $= \frac{2}{9}$ | |
| $\frac{7}{8} - \frac{1}{2} =$ | $= \frac{3}{8}$ | |
| $\frac{5}{6} - \frac{1}{5} =$ | $= \frac{19}{30}$ | |
| $\frac{1}{3} - \frac{1}{4} =$ | $= \frac{1}{12}$ | |
| $\frac{2}{5} - \frac{1}{8} =$ | $= \frac{11}{40}$ | |

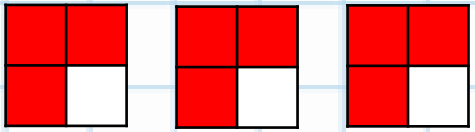
# Multiplying Fractions by Whole Numbers



## Step 1

Multiplying means doing the same thing a certain amount of times. If I have $^3/_4$ and multiply it by 3, that means I need $^3/_4$, 3 times.

$^3/_4$ x 3 = $^9/_4$



## Step 2

Multiply the numerator by the whole number.
3 x 3 = 9 so 9 is our answers numerator.

$^3/_4$ x 3 = $^9/_4$

## Step 3

Convert into a mixed number where necessary by using your denominator to help you work out how many wholes you have.

$^9/_4$

9 (numerator) ÷ 4 (denominator) = 2 r 1

...so our answer is $2\ ^1/_4$

| | Answer as an Improper Fraction | Answer as a Mixed Number |
|---|---|---|
| $^3/_4 \times 3$ | $^9/_4$ | $2\ ^1/_4$ |
| $^1/_7 \times 5$ | | |
| $^2/_5 \times 6$ | | |
| $^2/_{10} \times 9$ | | |
| $^5/_7 \times 3$ | | |
| $^5/_8 \times 2$ | | |
| $^7/_{12} \times 8$ | | |
| $^4/_5 \times 4$ | | |
| $^9/_{11} \times 7$ | | |
| $^6/_7 \times 12$ | | |
| $^1/_2 \times 5$ | | |
| $^3/_8 \times 7$ | | |
| $^8/_9 \times 4$ | | |

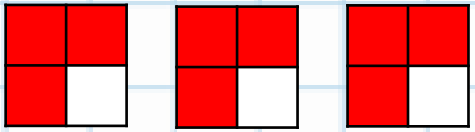
# Multiplying Fractions by Whole Numbers **Answers**



## Step 1

Multiplying means doing the same thing a certain amount of times. If I have $^3/_4$ and multiply it by 3, that means I need $^3/_4$, 3 times.

$^3/_4$ x 3 = $^9/_4$



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Convert into a mixed number where necessary by using your denominator to help you work out how many wholes you have.

$^9/_4$

9 (numerator) ÷ 4 (denominator) = 2 r 1

...so our answer is $2\ ^1/_4$

| | Answer as an Improper Fraction | Answer as a Mixed Number |
|---|---|---|
| $^3/_4 \times 3$ | $^9/_4$ | $2\ ^1/_4$ |
| $^1/_7 \times 5$ | $^5/_7$ | |
| $^2/_5 \times 6$ | $^{12}/_5$ | $2\ ^2/_5$ |
| $^2/_{10} \times 9$ | $^{18}/_{10}$ | $1\ ^8/_{10}$ *or* $1\ ^4/_5$ |
| $^5/_7 \times 3$ | $^{15}/_7$ | $2\ ^1/_7$ |
| $^5/_8 \times 2$ | $^{10}/_8$ | $1\ ^2/_8$ *or* $1\ ^1/_4$ |
| $^7/_{12} \times 8$ | $^{56}/_{12}$ | $4\ ^8/_{12}$ *or* $4\ ^2/_3$ |
| $^4/_5 \times 4$ | $^{16}/_5$ | $3\ ^1/_5$ |
| $^9/_{11} \times 7$ | $^{63}/_{11}$ | $5\ ^8/_{11}$ |
| $^6/_7 \times 12$ | $^{72}/_7$ | $10\ ^2/_7$ |
| $^1/_2 \times 5$ | $^5/_2$ | $2\ ^1/_2$ |
| $^3/_8 \times 7$ | $^{21}/_8$ | $2\ ^5/_8$ |
| $^8/_9 \times 4$ | $^{32}/_9$ | $3\ ^5/_9$ |

# Writing Decimals as Fractions



| Tens | Units | . | Tenths | Hundredths | Thousandths |
|---|---|---|---|---|---|
| | 4 | . | 3 | 6 | 8 |

## Step 1

Look at the column that the last decimal digit is in, this will give you your denominator.

Tenths = $/_{10}$

Hundredths = $/_{100}$

Thousandths = $/_{1000}$

## Step 2

You can then place the numbers in the decimal as the numerator, ignoring the decimal point. This will give you the answer as an improper fraction.

$$4368/_{1000}$$

## Step 3

For an answer of a mixed number, only place the decimal numbers as the numerator. The whole numbers (units, tens etc.) will be written as a whole number.

$$4\ 368/_{1000}$$

| Decimal | Fraction |
|---|---|
| 0.2 | |
| 1.36 | |
| 41.3 | |
| 6.08 | |
| 5.634 | |
| 9.42 | |
| 10.109 | |
| 3.065 | |
| 4.8 | |
| 18.65 | |
| 7.3 | |
| 4.006 | |
| 9.34 | |
| 8.06 | |

# Writing Decimals as Fractions **Answers**



| Tens | Units | . | Tenths | Hundredths | Thousandths |
|---|---|---|---|---|---|
| | 4 | . | 3 | 6 | 8 |

## Step 1

Look at the column that the last decimal digit is in, this will give you your denominator.

Tenths = $/_{10}$

Hundredths = $/_{100}$

Thousandths = $/_{1000}$

## Step 2

You can then place the numbers in the decimal as the numerator, ignoring the decimal point. This will give you the answer as an improper fraction.

$$4368/_{1000}$$

## Step 3

For an answer of a mixed number, only place the decimal numbers as the numerator. The whole numbers (units, tens etc.) will be written as a whole number.

$$4\ 368/_{1000}$$

| Decimal | Fraction |
|---|---|
| 0.2 | $2/_{10}$ |
| 1.36 | $136/_{100}$ *or* $1\ 36/_{100}$ |
| 41.3 | $413/_{10}$ *or* $41\ 3/_{10}$ |
| 6.08 | $608/_{100}$ *or* $6\ 8/_{100}$ |
| 5.634 | $5634/_{1000}$ *or* $5\ 634/_{1000}$ |
| 9.42 | $942/_{100}$ *or* $9\ 42/_{100}$ |
| 10.109 | $10109/_{1000}$ *or* $10\ 109/_{1000}$ |
| 3.065 | $3065/_{1000}$ *or* $3\ 65/_{1000}$ |
| 4.8 | $48/_{10}$ *or* $4\ 8/_{10}$ |
| 18.65 | $1865/_{100}$ *or* $18\ 65/_{100}$ |
| 7.3 | $73/_{10}$ *or* $7\ 3/_{10}$ |
| 4.006 | $4006/_{1000}$ *or* $4\ 6/_{1000}$ |
| 0.34 | $34/_{100}$ |
| 8.06 | $806/_{100}$ *or* $8\ 6/_{100}$ |

# Rounding Decimals to the Nearest Whole Number



| Tens | Units | . | Tenths | Hundredths | Thousandths |
|---|---|---|---|---|---|
| 1 | 4 | . | 2 | 0 | 8 |

**Step 1**

As we're rounding to the nearest whole number, we need to underline the units column and circle the tenths.

**Step 2**

If the tenths (circled number) is 5 or more, add one more to the underlined digit. If it's 4 or less, leave it as it is.

**Step 3**

For your answer, just write the units – you don't need anything after the decimal point.

*5 . (3) 4 = 5*

Less than 5 so we leave the units as they are.

*5 . (6) 7 8 = 6*

More than 5 so we add 1 to the units making 6.

| Number | Rounded to the Nearest Whole Number |
|---|---|
| 2.7 | |
| 6.28 | |
| 9.831 | |
| 14.3 | |
| 67.57 | |
| 80.04 | |
| 35.921 | |
| 421.6 | |
| 142.12 | |
| 371.823 | |
| 4.289 | |
| 99.72 | |
| 802.008 | |
| 129.7 | |

# Rounding Decimals to the Nearest Whole Number **Answers**



| Tens | Units | . | Tenths | Hundredths | Thousandths |
|---|---|---|---|---|---|
| 1 | 4 | . | 2 | 0 | 8 |

**Step 1**

As we're rounding to the nearest whole number, we need to underline the units column and circle the tenths.

**Step 2**

If the tenths (circled number) is 5 or more, add one more to the underlined digit. If it's 4 or less, leave it as it is.

**Step 3**

For your answer, just write the units – you don't need anything after the decimal point.

*5* . *3* *4* = *5*

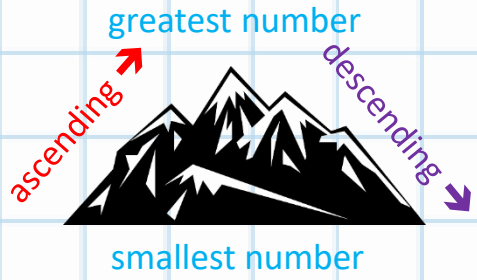
Less than 5 so we leave the units as they are.

*5* . *6* *7* *8* = *6*

More than 5 so we add 1 to the units making 6.

| Number | Rounded to the Nearest Whole Number |
|---|---|
| 2.7 | 3 |
| 6.28 | 6 |
| 9.831 | 10 |
| 14.3 | 14 |
| 67.57 | 68 |
| 80.04 | 80 |
| 35.921 | 36 |
| 421.6 | 422 |
| 142.12 | 142 |
| 371.823 | 372 |
| 4.289 | 4 |
| 99.72 | 100 |
| 802.008 | 802 |
| 129.7 | 130 |

# Ordering Decimals




## Step 1

Place all your numbers in a column, with all the digits aligned correctly and then check whether you're placing them in ascending or descending order.

$4 \bullet 3 \quad 6$

$3 \bullet 6 \quad 4$

$3 \bullet 4 \quad 6$

## Step 2

Compare the digits starting from the left, if they're the same value look at the next column until you find a difference.

4 is larger than 3 so 4.36 is larger than 3.64.

$4 \bullet 3 \quad 6$

$3 \bullet 6 \quad 4$

$3 \bullet 4 \quad 6$

Both digits are the same so we look at the tenths.

6 tenths are bigger than 4 tenths, so 3.64 is bigger than 3.46

**Ascending Order**

3.46, 3.64, 4.36

**Descending Order**

4.36, 3.64, 3.46

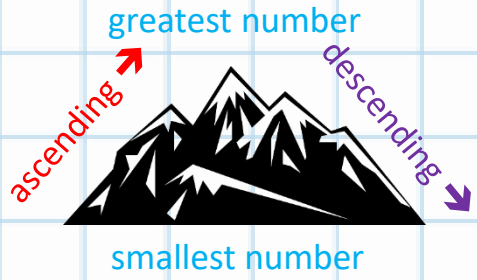
## Put the following numbers in **ascending order**

| | | | |
|---|---|---|---|
| 4.56 | 4.65 | 6.54 | 5.46 |
| | | | |
| 15.2 | 1.52 | 2.51 | 5.21 |
| | | | |
| 1.243 | 1.423 | 1.432 | 1.234 |
| | | | |

## Put the following numbers in **descending order**

| | | | |
|---|---|---|---|
| 8.29 | 8.291 | 8.912 | 8.2 |
| | | | |
| 6.57 | 5.76 | 57.6 | 56.7 |
| | | | |
| 2.01 | 0.12 | 10.2 | 0.21 |
| | | | |

# Ordering Decimals Answers




## Step 1

Place all your numbers in a column, with all the digits aligned correctly and then check whether you're placing them in ascending or descending order.

4 • 3 6

3 • 6 4

3 • 4 6

## Step 2

Compare the digits starting from the left, if they're the same value look at the next column until you find a difference.

4 is larger than 3 so 4.36 is larger than 3.64.

4 • 3 6

3 • 6 4

3 • 4 6

Both digits are the same so we look at the tenths.

6 tenths are bigger than 4 tenths, so 3.64 is bigger than 3.46

**Ascending Order**

3.46, 3.64, 4.36

**Descending Order**

4.36, 3.64, 3.46

## Put the following numbers in **ascending order**

| | | | |
|---|---|---|---|
| 4.56 | 4.65 | 6.54 | 5.46 |
| 4.56 | 4.65 | 5.46 | 6.54 |
| 15.2 | 1.52 | 2.51 | 5.21 |
| 1.52 | 2.51 | 5.21 | 15.2 |
| 1.243 | 1.423 | 1.432 | 1.234 |
| 1.234 | 1.243 | 1.423 | 1.432 |

## Put the following numbers in **descending order**

| | | | |
|---|---|---|---|
| 8.29 | 8.291 | 8.912 | 8.2 |
| 8.912 | 8.291 | 8.29 | 8.2 |
| 6.57 | 5.76 | 57.6 | 56.7 |
| 57.6 | 56.7 | 6.57 | 5.76 |
| 2.01 | 0.12 | 10.2 | 0.2 |
| 10.2 | 2.01 | 0.2 | 0.12 |

# Comparing Decimals

| smaller than | larger than | equal to |
|---|---|---|
| < | > | = |

## Step 1

Place your numbers in a column, with all the digits aligned correctly.

$3 \bullet 4 \quad 3 \quad 6$

$3 \bullet 3 \quad 6 \quad 4$

## Step 2

Compare the digits starting from the left, if they're the same value look at the next column until you find a difference.


## Step 3

Choose the correct symbol for the numbers.

*3.436 > 3.364*

*"3.436 is larger than 3.364."*

Use >, < or = to compare these numbers.

| | | |
|---|---|---|
| 4.564 | | 4.654 |
| 1.2 | | 1 |
| 65.1 | | 65.17 |
| 0.123 | | 0.3 |
| 5.678 | | 5.688 |
| 46.894 | | 48.849 |
| 6.03 | | 6.03 |
| 4.12 | | 4.21 |
| 10.6 | | 10.25 |
| 9.06 | | 9.6 |

# Comparing Decimals Answers

| smaller than | larger than | equal to |
|---|---|---|
| < | > | = |

## Step 1

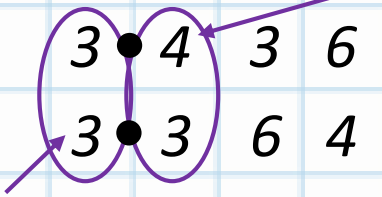
Place your numbers in a column, with all the digits aligned correctly.

3 • 4 3 6

3 • 3 6 4

## Step 2

Compare the digits starting from the left, if they're the same value look at the next column until you find a difference.




4 tenths is larger than 3 tenths so 3.436 is larger than 3.364.

Both digits are the same so we look at the tenths.

## Step 3

Choose the correct symbol for the numbers.

*3.436 > 3.364*

*"3.436 is larger than 3.364."*

Use >, < or = to compare these numbers.

| | | |
|---|---|---|
| 4.564 | < | 4.654 |
| 1.2 | > | 1 |
| 65.1 | < | 65.17 |
| 0.123 | < | 0.3 |
| 5.678 | < | 5.688 |
| 46.894 | > | 48.849 |
| 6.03 | = | 6.03 |
| 4.12 | < | 4.21 |
| 10.6 | > | 10.25 |
| 9.06 | < | 9.6 |

# Percentages as Fractions & Decimals

## Step 1

Percentages are shown by using the symbol % and 'per cent' means 'out of 100.'

So if we have 67% this means 67 out of 100.

## Step 2

If we know that it's out of 100, we can place this as our denominator, as this tells us how many make a whole.

$$/_{100}$$

## Step 3

The number of our percentage tells us how many of that 100 we are counting, so that becomes the numerator, which gives us our fraction.

$$^{67}/_{100}$$

## Step 4

Once we have our fraction we can convert it into our decimal. As we're working with hundredths this is 2 places away from our decimal point. This means the last number of our numerator (the 7) goes in our hundredths, and the first number (the 6) will go in our tenths.

$$^{67}/_{100}$$

| Units | $^{1}/_{10}$ Tenths | $^{1}/_{100}$ Hundredths |
|---|---|---|
| 0 | 6 | 7 |

| Percentage | Fraction | Decimal |
|---|---|---|
| 67% | $^{67}/_{100}$ | 0.67 |
| 32% | | |
| 7% | | |
| 18% | | |
| 91% | | |
| 50% | | |
| 31% | | |
| 80% | | |
| 3% | | |
| 100% | | |
| 26% | | |
| 47% | | |
| 99% | | |

# Percentages as Fractions & Decimals Answers

## Step 1

Percentages are shown by using the symbol % and 'per cent' means 'out of 100.'

So if we have 67% this means 67 out of 100.

## Step 2

If we know that it's out of 100, we can place this as our denominator, as this tells us how many make a whole.

$$/_{100}$$

## Step 3

The number of our percentage tells us how many of that 100 we are counting, so that becomes the numerator, which gives us our fraction.

$$^{67}/_{100}$$

## Step 4

Once we have our fraction we can convert it into our decimal. As we're working with hundredths this is 2 places away from our decimal point. This means the last number of our numerator (the 7) goes in our hundredths, and the first number (the 6) will go in our tenths.

$$^{67}/_{100}$$

| Units | $^{1}/_{10}$ Tenths | $^{1}/_{100}$ Hundredths |
|---|---|---|
| 0 | 6 | 7 |

| Percentage | Fraction | Decimal |
|---|---|---|
| 67% | $^{67}/_{100}$ | 0.67 |
| 32% | $^{32}/_{100}$ | 0.32 |
| 7% | $^{7}/_{100}$ | 0.07 |
| 18% | $^{18}/_{100}$ | 0.18 |
| 91% | $^{91}/_{100}$ | 0.91 |
| 50% | $^{50}/_{100}$ | 0.5 |
| 31% | $^{31}/_{100}$ | 0.31 |
| 80% | $^{80}/_{100}$ | 0.8 |
| 3% | $^{3}/_{100}$ | 0.03 |
| 100% | $^{100}/_{100}$ | 1 |
| 26% | $^{26}/_{100}$ | 0.26 |
| 47% | $^{47}/_{100}$ | 0.47 |
| 99% | $^{99}/_{100}$ | 0.99 |

# Converting Metric Measures



| Units of Length | Units of Mass | Units of Capacity |
|---|---|---|
| 10 mm = 1 cm<br>100 cm = 1 m<br>1000 m = 1 km | 1000 g = 1 kg | 1000 ml = 1 l |

## Step 1

Write out the measurements that you need, thinking of how many go into 1 of the other. For example, if converting cm to metres, we need to know how many cm are in a m.

1000 cm = 1 m

## Step 2

Add arrows showing how you get to each value from the other.

X 1000 ←

1000 cm = 1 m

→ ÷ 1000

## Step 3

You can then use these calculations to work out your answer.

What is 3708 cm in m?

To get from cm to m we need to ÷ 1000 so we need to divide 3708 by 1000.

3708 cm = 3.708 m

| Question | Answer |
|---|---|
| What is 3 l in ml? | |
| What is 4500 g in kg? | |
| What is 3.4 km in m? | |
| What is 67 cm in mm? | |
| What is 380 ml in l? | |
| What is 2.78 kg in g? | |
| What is 14 m in cm? | |
| What is 7 mm in cm? | |
| What is 15.6 l in ml? | |
| What is 837 g in kg? | |
| What is 1.2 m in mm? | |
| What is 63,000 cm in km? | |
| What is 2 g in kg? | |

# Converting Metric Measures Answers



| Units of Length | Units of Mass | Units of Capacity |
|---|---|---|
| 10 mm = 1 cm<br>100 cm = 1 m<br>1000 m = 1 km | 1000 g = 1 kg | 1000 ml = 1 l |

## Step 1

Write out the measurements that you need, thinking of how many go into 1 of the other. For example, if converting cm to metres, we need to know how many cm are in a m.

1000 cm = 1 m

## Step 2

Add arrows showing how you get to each value from the other.

X 1000

1000 cm = 1 m

÷ 1000

## Step 3

You can then use these calculations to work out your answer.

What is 3708 cm in m?

To get from cm to m we need to ÷ 1000 so we need to divide 3708 by 1000.

3708 cm = 3.708 m

| Question | Answer |
|---|---|
| What is 3 l in ml? | 3000 ml |
| What is 4500 g in kg? | 4.5 kg |
| What is 3.4 km in m? | 3400 m |
| What is 67 cm in mm? | 670 mm |
| What is 380 ml in l? | 0.38 l |
| What is 2.78 kg in g? | 2780 g |
| What is 14 m in cm? | 1400 cm |
| What is 7 mm in cm? | 0.7 cm |
| What is 15.6 l in ml? | 15,600 ml |
| What is 837 g in kg? | 0.837 kg |
| What is 1.2 m in mm? | 1200 mm |
| What is 63,000 cm in km? | 0.63 km |
| What is 2 g in kg? | 0.002 kg |

# Converting between Units of Time



| Units of Time | |
|---|---|
| 60 seconds = 1 minute<br>60 minutes = 1 day<br>24 hours = 1 day | 7 days = 1 week<br>12 months = 1 year<br>365 days = 1 year |

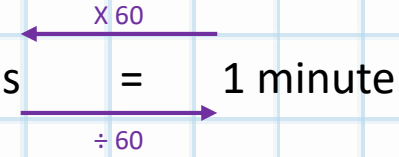
## Step 1

Write out the measurements that you need, thinking of how many go into 1 of the other. For example, if converting seconds to minutes, we need to know how many seconds are in a minute.

60 seconds = 1 minute

## Step 2

Add arrows showing how you get to each value from the other.




## Step 3

You can then use these calculations to work out your answer.

What is 240 seconds in minutes?

To get from seconds to minutes we need to ÷ 60 so we need to divide 240 by 60.

240 seconds = 4 minutes

| Question | Answer |
|---|---|
| What is 360 seconds in minutes? | |
| What is 300 minutes in hours? | |
| What is 86 minutes in seconds? | |
| What is 60 months in years? | |
| What is 7 minutes in seconds? | |
| What is 3 hours in minutes? | |
| What is 3 ½ minutes in seconds? | |
| What is 28 days in weeks? | |
| What is 480 minutes in hours? | |
| What is 13 weeks in days? | |
| What is 100 minutes in hours and minutes? | |
| What is 5 ½ hours in minutes? | |
| What is 3 years in days? | |

# Converting between Units of Time **Answers**



| Units of Time | |
|---|---|
| 60 seconds = 1 minute<br>60 minutes = 1 day<br>24 hours = 1 day | 7 days = 1 week<br>12 months = 1 year<br>365 days = 1 year |

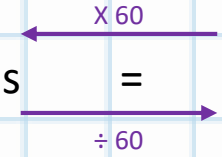
## Step 1

Write out the measurements that you need, thinking of how many go into 1 of the other. For example, if converting seconds to minutes, we need to know how many seconds are in a minute.

60 seconds = 1 minute

## Step 2

Add arrows showing how you get to each value from the other.




## Step 3

You can then use these calculations to work out your answer.

What is 240 seconds in minutes?

To get from seconds to minutes we need to ÷ 60 so we need to divide 240 by 60.

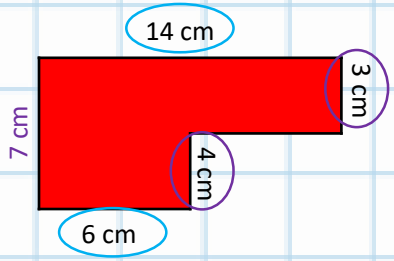
240 seconds = 4 minutes

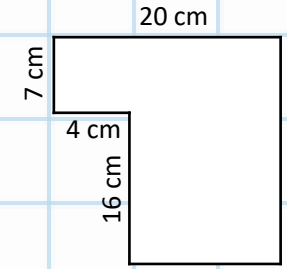
| Question | Answer |
|---|---|
| What is 360 seconds in minutes? | 6 minutes |
| What is 300 minutes in hours? | 5 hours |
| What is 86 minutes in seconds? | 5160 seconds |
| What is 60 months in years? | 5 years |
| What is 7 minutes in seconds? | 420 seconds |
| What is 3 hours in minutes? | 180 minutes |
| What is 3 ½ minutes in seconds? | 210 seconds |
| What is 28 days in weeks? | 4 weeks |
| What is 480 minutes in hours? | 8 hours |
| What is 13 weeks in days? | 91 days |
| What is 100 minutes in hours and minutes? | 1 hour 40 minutes |
| What is 5 ½ hours in minutes? | 330 minutes |
| What is 3 years in days? | 1095 days |

# Perimeter of Composite Shapes

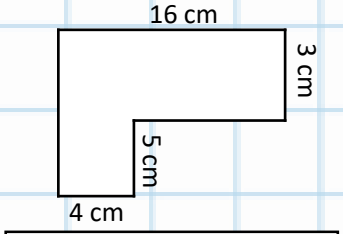
## Step 1

A composite or compound shape is a shape made up of more than one square or rectangle.




P =



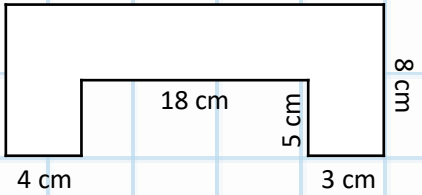

P =

## Step 2

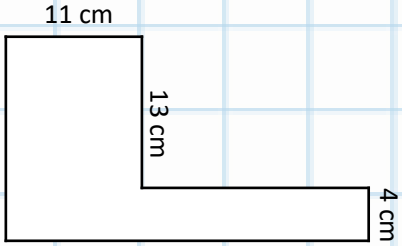
When working out the missing sides, you look at all the horizontal lines, or the vertical lines.

***If you know two shorter sides, <u>add</u> these together to find the longer opposite side.***

3 cm + 4 cm = 7 cm




P =




P =

## Step 3

***If you know a longer side opposite a shorter side, <u>subtract</u> the shorter side from the longer side.***

14 cm - 6 cm = 8 cm

## Step 4

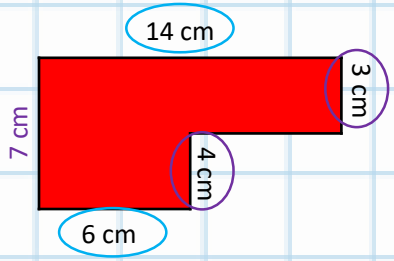
Add **all** of the lengths of the sides together to find the perimeter.

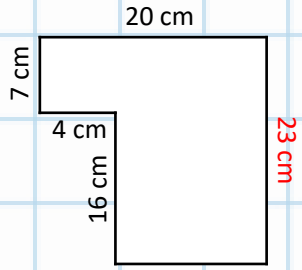
14 cm + 3 cm + 4 cm + 6 cm + 7 cm = **34 cm**

# Perimeter of Composite Shapes **Answers**

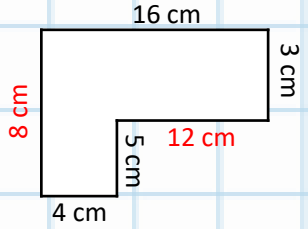
## Step 1

A composite or compound shape is a shape made up of more than one square or rectangle.




P = 86 cm



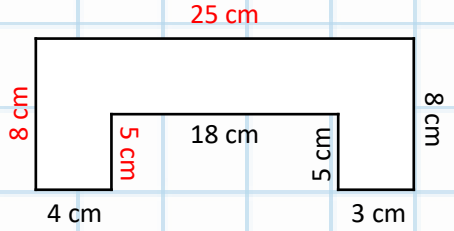

P = 48 cm

## Step 2

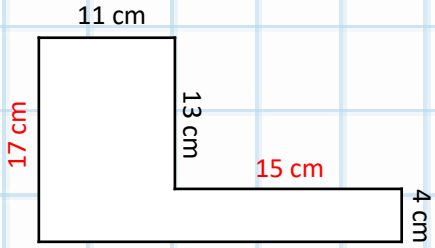
When working out the missing sides, you look at all the horizontal lines, or the vertical lines.

***If you know two shorter sides, <u>add</u> these together to find the longer opposite side.***

3 cm + 4 cm = 7 cm




P = 76 cm




P = 86 cm

## Step 3

***If you know a longer side opposite a shorter side, <u>subtract</u> the shorter side from the longer side.***

14 cm - 6 cm = 8 cm

## Step 4

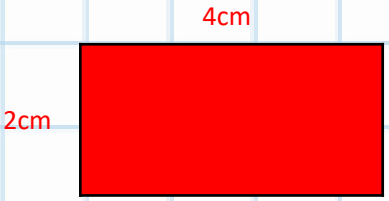
Make sure you've filled in **all** of the missing sides. Then add **all** of the lengths of the sides together to find the perimeter.

14 cm + 3 cm + 4 cm + 6 cm + 7 cm = **34 cm**

# Area of Rectangles

## Step 1

The area tells you space inside a shape.
To work out the area of a rectangle, or square, multiply the width by the length.




***A = l x w***

***Area = 4 x 2***

So the area = 8

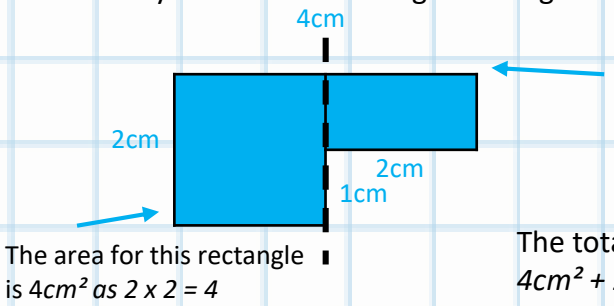
## Step 2

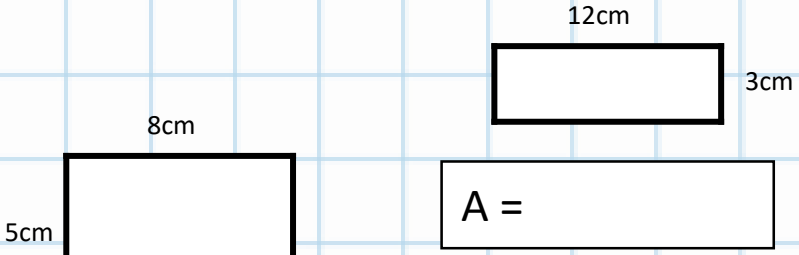
Once you've calculated your area, ensure that you write the correct unit of measure. This rectangle has been measured in cm, we then need to use the squared symbol as it's measured in 2 directions.

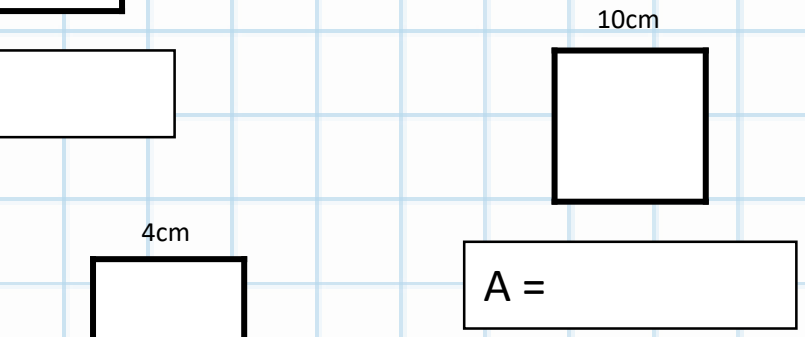
***Area = 4 x 2 = 8 cm²***

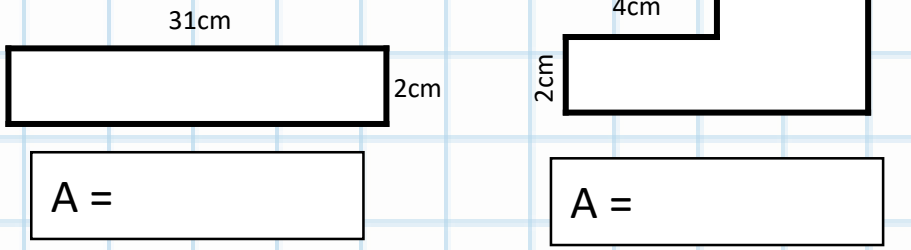
## Step 3

To work out the area of composite or compound shapes (all rectangular), split the shape into appropriate rectangles and work out the area for them individually. Then add them together to get the area of the whole shape.



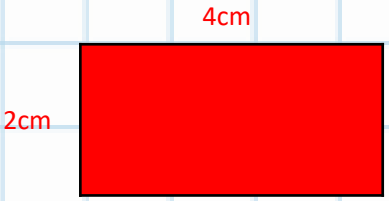



# Area of Rectangles Answers

## Step 1

The area tells you space inside a shape.
To work out the area of a rectangle, or square, multiply the width by the length.




***A = l x w***

***Area = 4 x 2***

So the area = 8

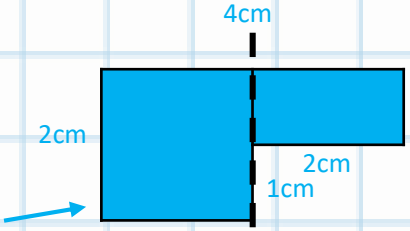
## Step 2

Once you've calculated your area, ensure that you write the correct unit of measure. This rectangle has been measured in cm, we then need to use the squared symbol as it's measured in 2 directions.

***Area = 4 x 2 = 8 cm²***

## Step 3

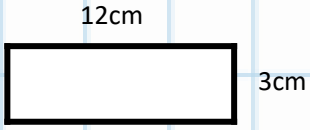
To work out the area of composite or compound shapes (all rectangular), split the shape into appropriate rectangles and work out the area for them individually. Then add them together to get the area of the whole shape.



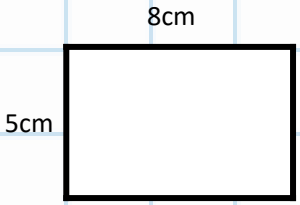

The area for this rectangle is *2cm² as 2 x 1 = 2*

The area for this rectangle is *4cm² as 2 x 2 = 4*

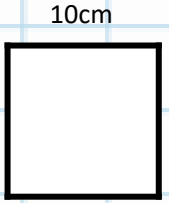
The total area = *6cm²*
*4cm² + 2cm² = 6cm²*



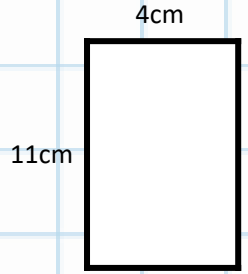

A = 36cm²



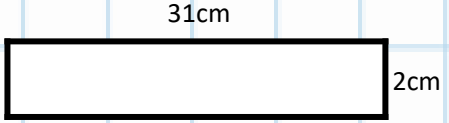

A = 40cm²



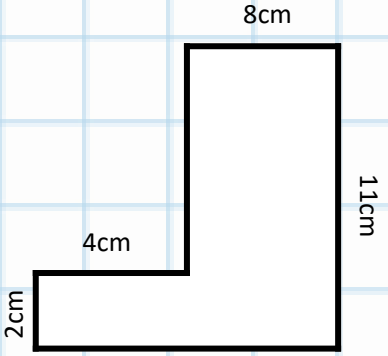

A = 100cm²




A = 44cm²




A = 62cm²

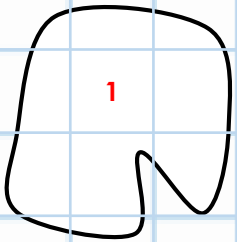



A = 96cm²

# Area of Irregular Shapes

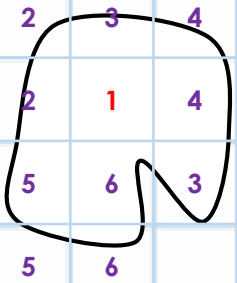
## Step 1

Starting with the full squares, number them starting from 1.




## Step 2

Once you've numbered all the full squares, number the pieces of squares, trying to match them as best as you can to make a whole square.

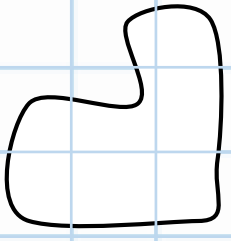



## Step 3

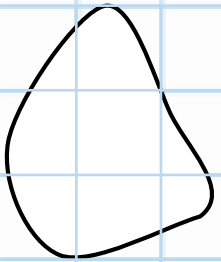
Once all squares are approximately accounted for that is the estimated area of the shape.

Area = 6 cm²

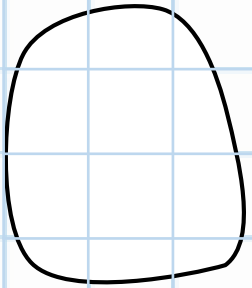
Don't forget to include your units and your squared symbol (²)



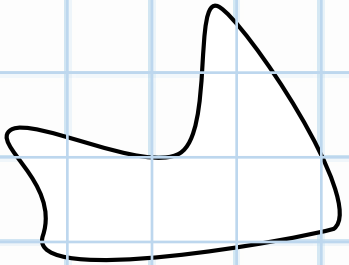
A =



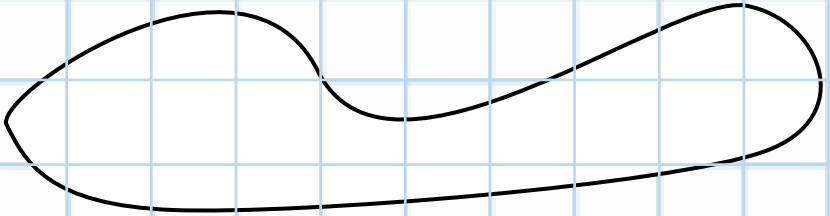
A =



A =



A =

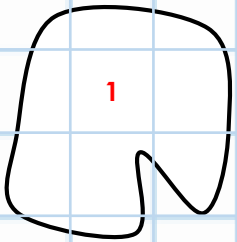


A =

# Area of Irregular Shapes Answers

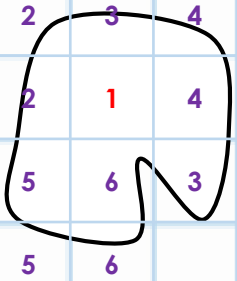
## Step 1

Starting with the full squares, number them starting from 1.




## Step 2

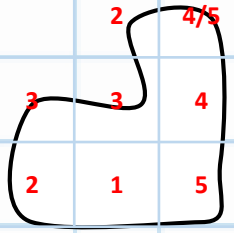
Once you've numbered all the full squares, number the pieces of squares, trying to match them as best as you can to make a whole square.



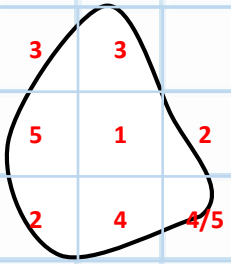

## Step 3

Once all squares are approximately accounted for that is the estimated area of the shape.

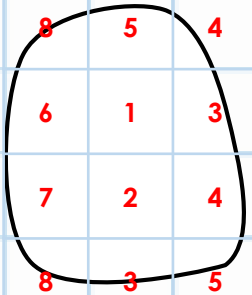
Area ≈ 6 cm² ← Don't forget to include your units and your squared symbol (²)




A ≈ **5 cm²**

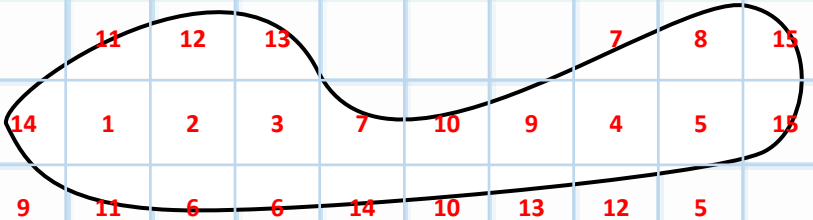



A ≈ **5 cm²**




A ≈ **8 cm²**


A ≈ **6 cm²**




A ≈ **15 cm²**

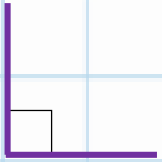
# Obtuse, Acute & Reflex Angles

## Step 1

An acute angle is an angle between 0° and 89°. It is smaller than a right angle.

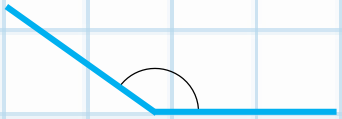
## Step 2

A right angle is an angle that is exactly 90° and is marked by a square.



## Step 3

An obtuse angle is an angle between 91° and 179°. It is bigger than a right angle but smaller than a straight line angle.

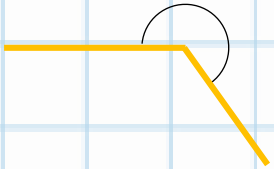


## Step 4

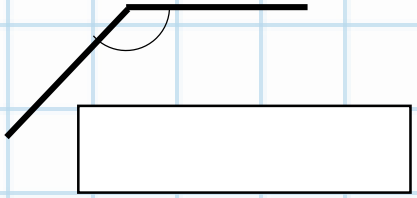
A straight line angle is exactly 180°.

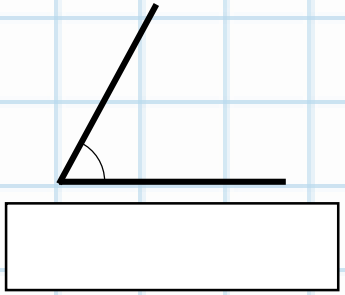
## Step 5

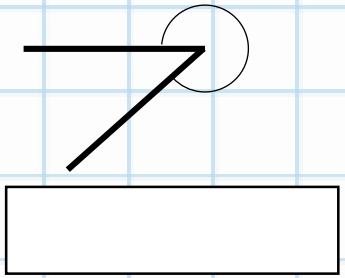
A reflex angle is an angle between 181° and 359°. It is bigger than a straight line angle but smaller than a full turn (360°).

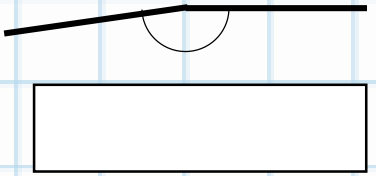


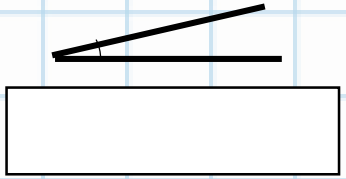
## Label the following angles.

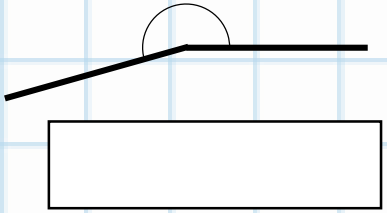


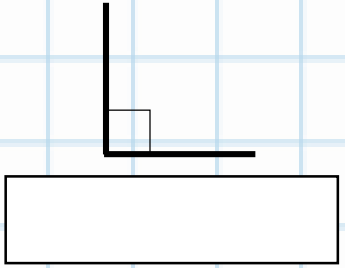


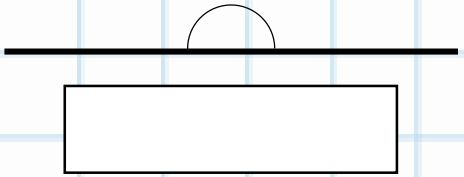












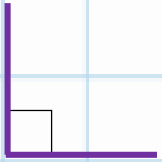
# Obtuse, Acute & Reflex Angles **Answers**

## Step 1

An acute angle is an angle between 0° and 89°. It is smaller than a right angle.

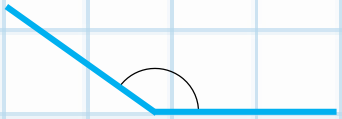
## Step 2

A right angle is an angle that is exactly 90° and is marked by a square.



## Step 3

An obtuse angle is an angle between 91° and 179°. It is bigger than a right angle but smaller than a straight line angle.

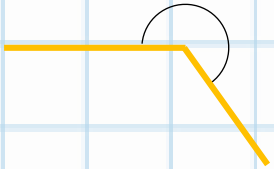


## Step 4

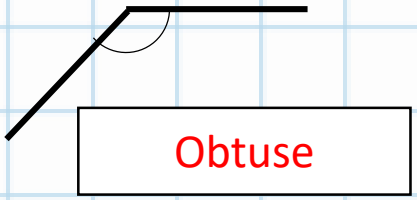
A straight line angle is exactly 180°.

## Step 5

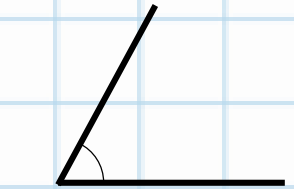
A reflex angle is an angle between 181° and 359°. It is bigger than a straight line angle but smaller than a full turn (360°).



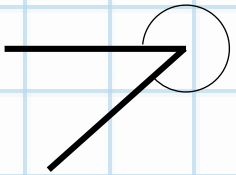
## Label the following angles.



Obtuse



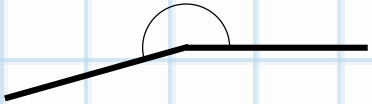
Acute



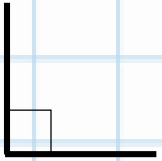
Reflex

Obtuse

Acute



Reflex



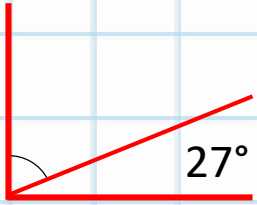
Right Angle

Straight Line

# Missing Angles

## Step 1

To find the missing angles of a right angle, we know that a right angle is exactly 90°, so we add the known values, then subtract from 90°.

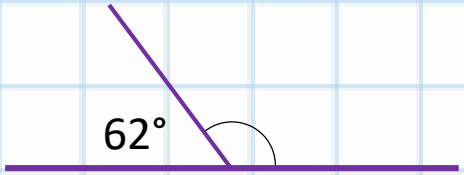



90 - 27 = 73

So the missing angle is 73°

## Step 2

To find the missing angles from a straight line angle, we know that this angle is exactly 180°, so we add the known values, then subtract from 180°.

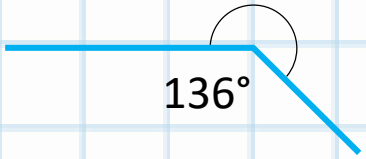



180 - 62 = 118

So the missing angle is 118°

## Step 3

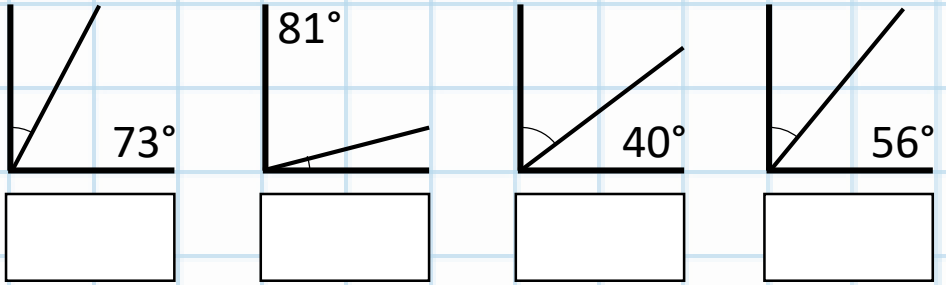
To find the missing angles from a full turn, we know that a full turn is exactly 360°, so we add the known values, then subtract from 360°.

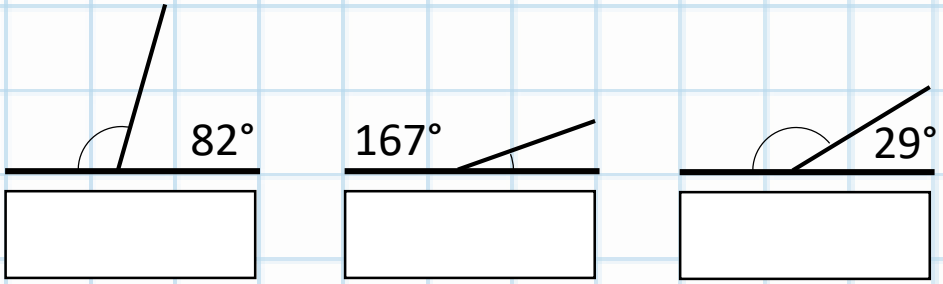


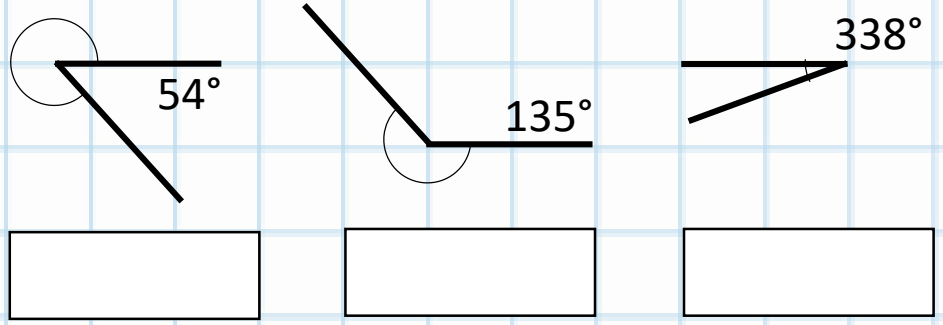

360 - 136 = 224

So the missing angle is 224°

## Find the missing angles:



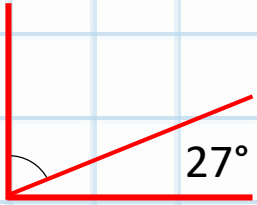



# Missing Angles **Answers**

## Step 1

To find the missing angles of a right angle, we know that a right angle is exactly 90°, so we add the known values, then subtract from 90°.

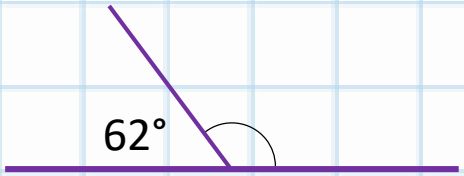



90 - 27 = 73

So the missing angle is 73°

## Step 2

To find the missing angles from a straight line angle, we know that this angle is exactly 180°, so we add the known values, then subtract from 180°.

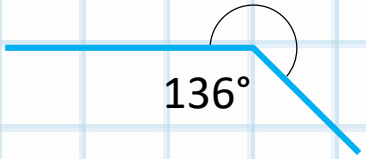



180 - 62 = 118

So the missing angle is 118°

## Step 3

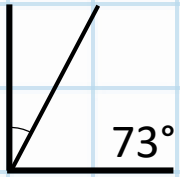
To find the missing angles from a full turn, we know that a full turn is exactly 360°, so we add the known values, then subtract from 360°.



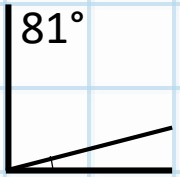

360 - 136 = 224

So the missing angle is 224°

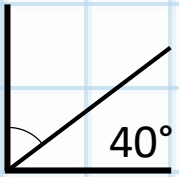
## Find the missing angles:



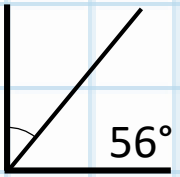

17°



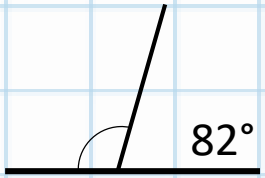

9°




50°

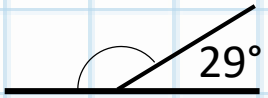



34°

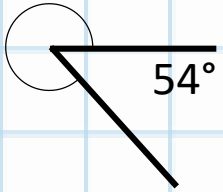



98°

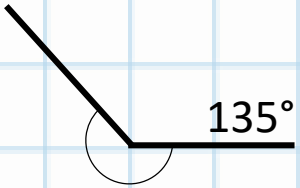

13°



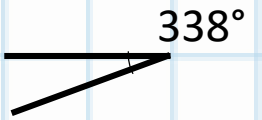

151°




306°




225°




22°

# Translations

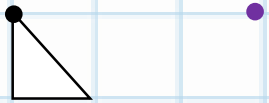
## Step 1

A translation is a movement of a shape by a given set of instructions. Choose a point, or use the one given if there's one.

**Translate 3 right and 1 down.**

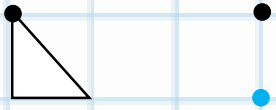
## Step 2

Count the correct amount of units across and draw a small dot. This will be your left/right instruction.



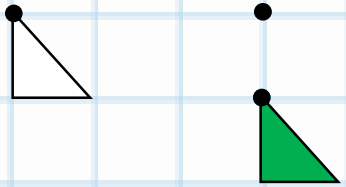
## Step 3

From the dot that you've just drawn, count the correct units down (or up, depending on your instructions.

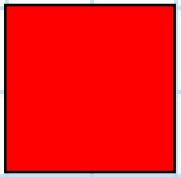


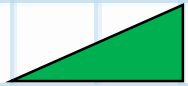
## Step 4

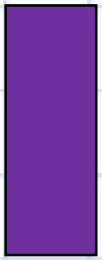
Then draw the original shape in the new position starting with the dot.

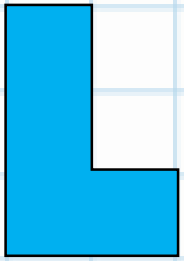


Translate the following shapes on the page according to their colour.









**Red**: 9 right and 3 down
**Green**: 3 left and 9 down
**Blue**: 1 right and 8 up
**Purple**: 5 left and 4 down

# Translations Answers

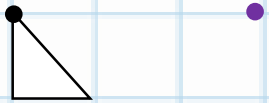
## Step 1

A translation is a movement of a shape by a given set of instructions. Choose a point, or use the one given if there's one.

**Translate 3 right and 1 down.**

## Step 2

Count the correct amount of units across and draw a small dot. This will be your left/right instruction.



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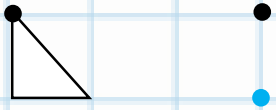

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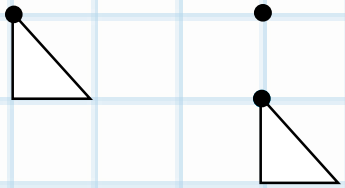
Then draw the original shape in the new position starting with the dot.



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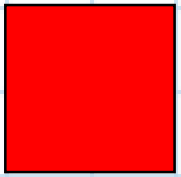
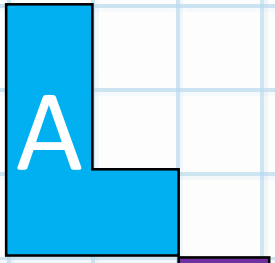
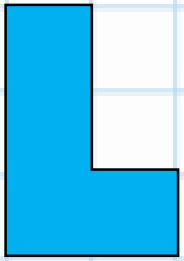






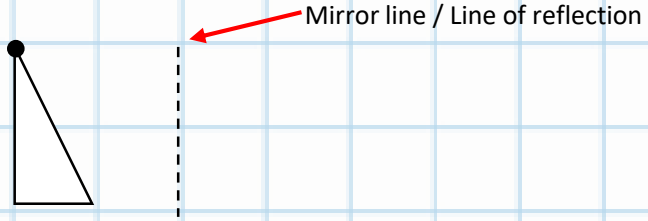




**Red**: 9 right and 3 down
**Green**: 3 left and 9 down
**Blue**: 1 right and 8 up
**Purple**: 5 left and 4 down

# Reflections

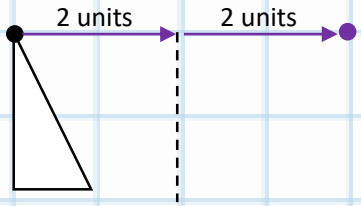
## Step 1

A reflection is where each point in a shape appears at an equal distance on the opposite side of a given line. Choose a point, or use the one given if there's one.



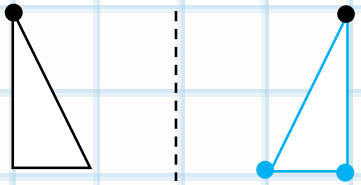

## Step 2

Count the units from the point to the mirror line. Count the same number the other side and draw a dot.

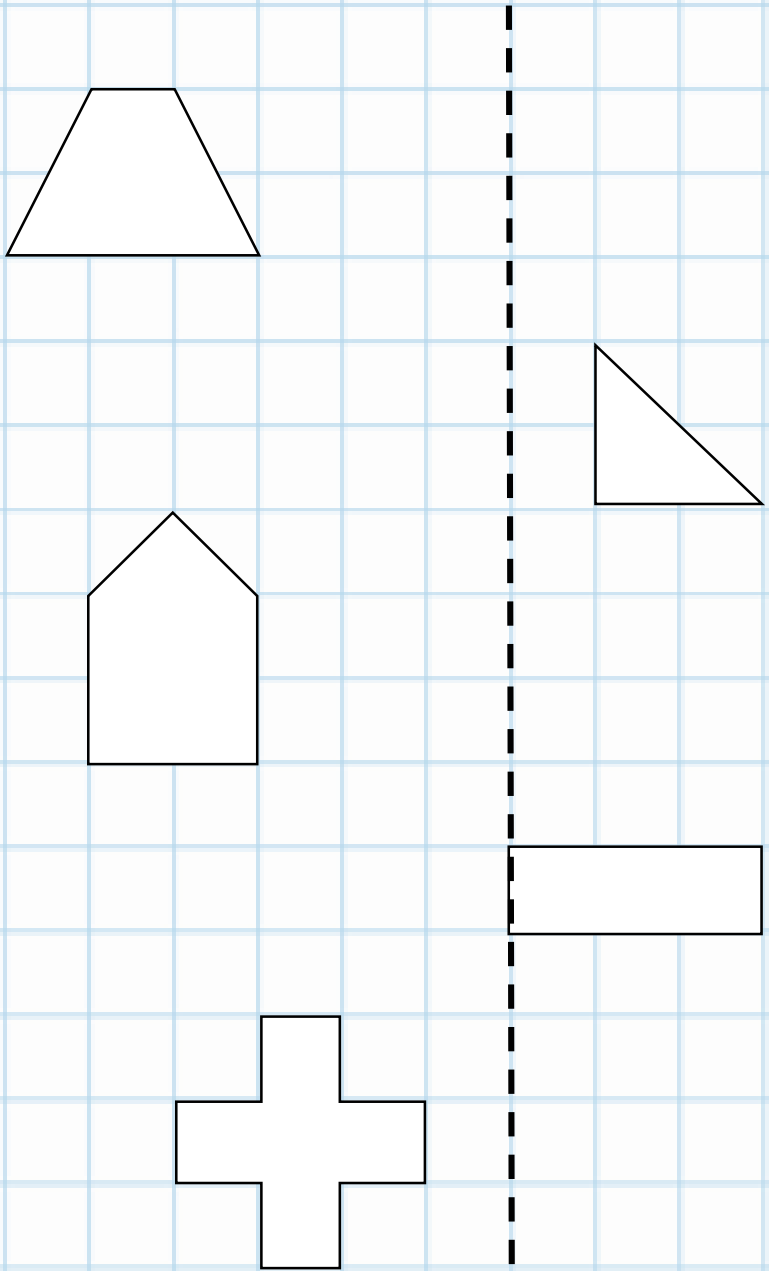



## Step 3

Repeat with the other points and join together using a ruler.



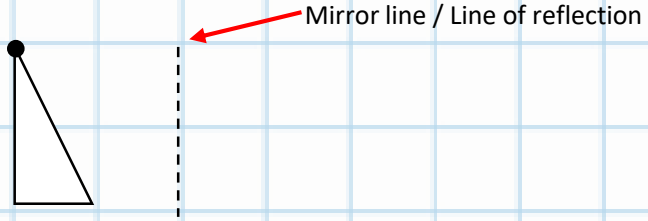
Reflect the shapes against the line of symmetry



# Reflections Answers

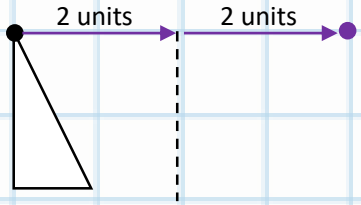
## Step 1

A reflection is where each point in a shape appears at an equal distance on the opposite side of a given line. Choose a point, or use the one given if there's one.



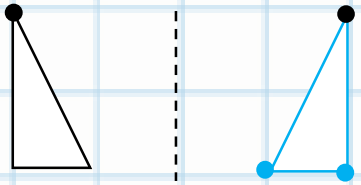

## Step 2

Count the units from the point to the mirror line. Count the same number the other side and draw a dot.




## Step 3

Repeat with the other points and join together using a ruler.



Reflect the shapes against the line of symmetry