



THE BRITISH INTERNATIONAL SCHOOL
ABU DHABI

A NORD ANGLIA EDUCATION SCHOOL

Year 7 Maths

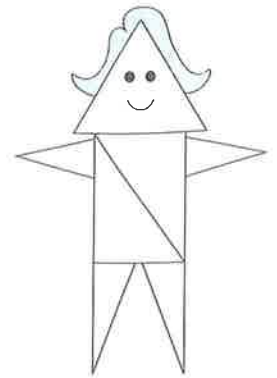
Topic 7-8-9 Workbook

In the table below translate the key terms into your home language and write a short definition for each term [if needed visit www.mathsisfun.com/definitions/].

TOPIC 7 - ANGLES		
TERM	TRANSLATION	DEFINITION
Angle		
Acute		
Obtuse		
Reflex		
Protractor		
Isosceles		
Equilateral		
Quadrilateral		
TOPIC 8 - DEGREES OF ACCURACY		
Integer		
Decimal		
Significant Figures		
Rounding		
TOPIC 9 - LINEAR EQUATIONS		
Equation		
Rearranging		
Solving		

Properties of Triangles

1. Ms. Anne Gular is made up of seven triangles.
- Shade all of the isosceles triangles.
 - How many right-angled triangles are there?



- What type of triangle is her head?

.....

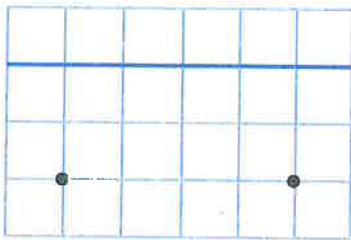
.....

2. Complete these sentences by underlining the correct words.
- Every (**equilateral** / **isosceles**) triangle has three equal angles.
 - The number of equal angles in a scalene triangle is (**zero** / **two**).
 - A right-angled triangle (**always** / **sometimes** / **never**) has one line of symmetry.
 - It's (**possible** / **impossible**) to draw a triangle with rotational symmetry of order 2.

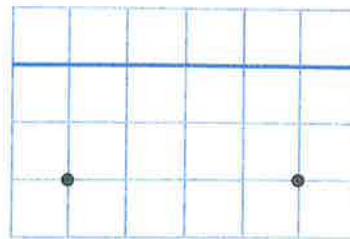
3. Two points have been drawn on each of these grids.

Draw a third point on the bold line and then join them up to create:

- a) an isosceles triangle



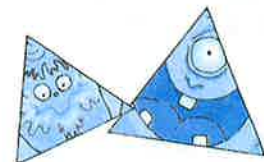
- b) a scalene triangle



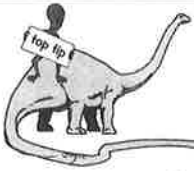
How did you do?

Triangles can be pointy creatures at first — but get to know them and you'll learn to love them. Once you're good pals, you should:

- Be able to name and identify the different types of triangles.
- Know the properties of triangles, including any equal angles, equal sides and symmetries.

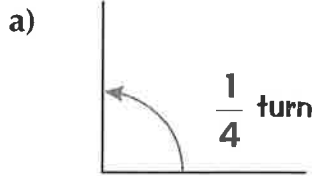


Lines and Angles

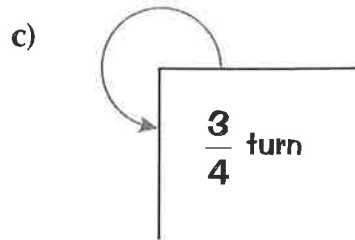


There are a few pages about angles on the way, so try out these questions to make sure you're tip-top on the basics.

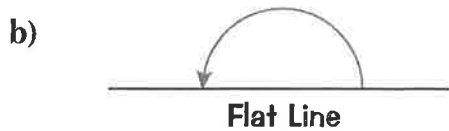
Q1 The angles below are pretty important. Write down the size of each of them.



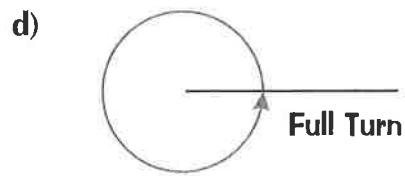
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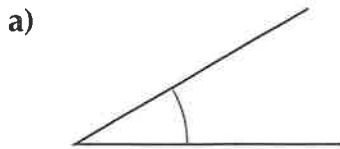


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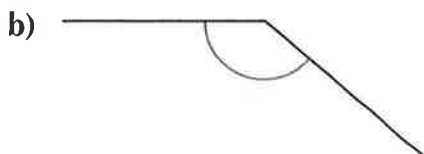
Q2 Describe each angle using the words 'acute', 'obtuse' or 'reflex'.



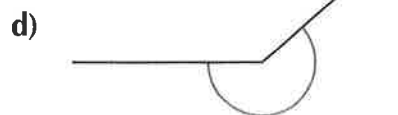
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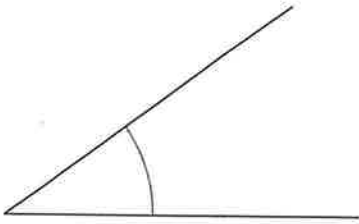
Measuring and Drawing Angles



Be careful when using protractors as they have two scales — one going one way and one the other. You've got to measure from the 0, not the 180 or you'll end up in a silly mess.

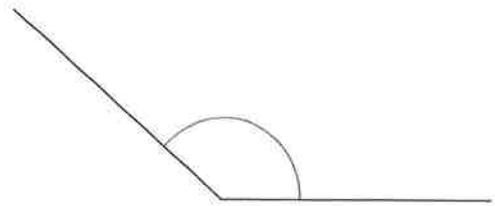
Q1 Use a protractor to measure the following angles:

a)



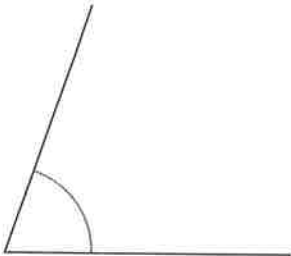
.....

c)



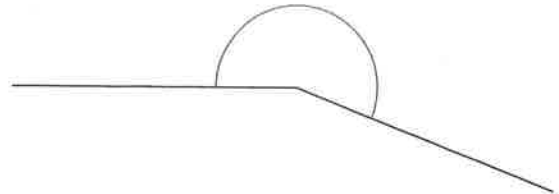
.....

b)



.....

d)



.....



Q2 Using the line given as a base, draw:

a) an example of an acute angle, clearly labelling the size of the angle

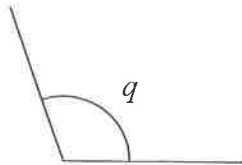
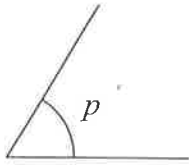


b) an example of an obtuse angle, clearly labelling the size of the angle.



Measuring and Drawing Lines and Angles

1. Use a protractor to find the size of these angles.

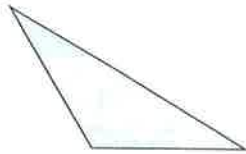


$p = \dots\dots\dots^\circ$
 $q = \dots\dots\dots^\circ$
 $r = \dots\dots\dots^\circ$

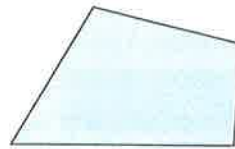
2. For each of these shapes, circle the angle described and then measure it using a protractor.

a) The obtuse angle

b) The acute angle



$\dots\dots\dots^\circ$



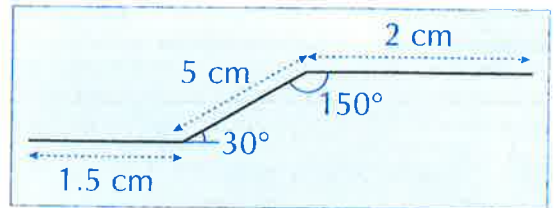
$\dots\dots\dots^\circ$

3. Draw a line BC that is 3 cm in length and makes an angle of 215° at B .

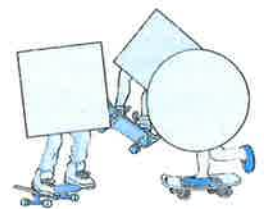


4. The Square Skate Squad have designed a miniature skate ramp.

a) Use the sketch on the right to accurately draw the squad's ramp below. The platform at the bottom of the ramp has been drawn for you.



b) Use a ruler to measure the vertical height of the ramp. $\dots\dots\dots$ cm



How did you do?

Ahhh, nothing quite like the smell of sopping wet sheep and fresh cow dung in the morning. Hang on, this page is about using *protractors*?! ... My bad. Check you're now able to:

Use a ruler to measure line segments.

Use a protractor to measure angles.

Use a ruler to draw line segments.

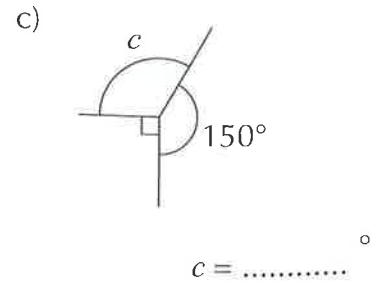
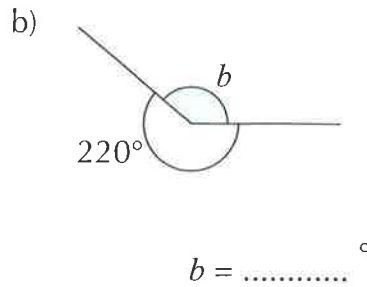
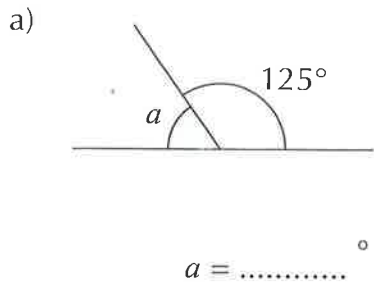
Use a ruler and protractor to draw angles.



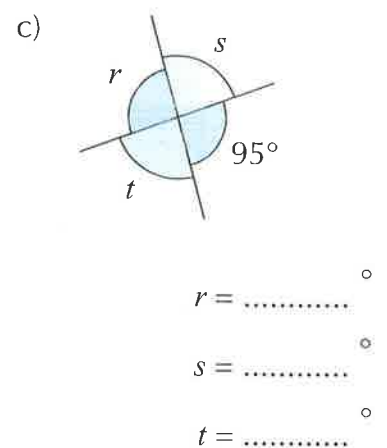
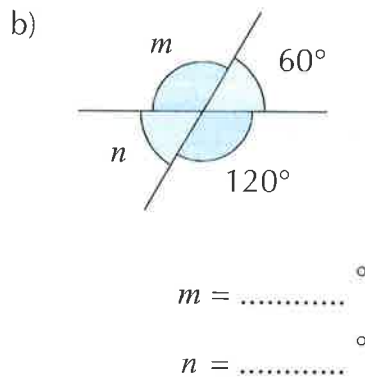
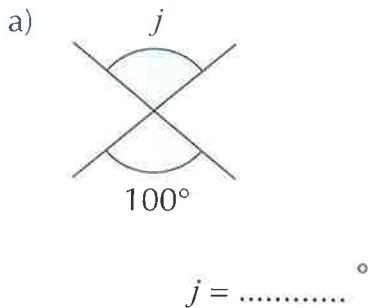
Angle Rules

1. Find the missing angles.

None of the diagrams on this page are drawn accurately.



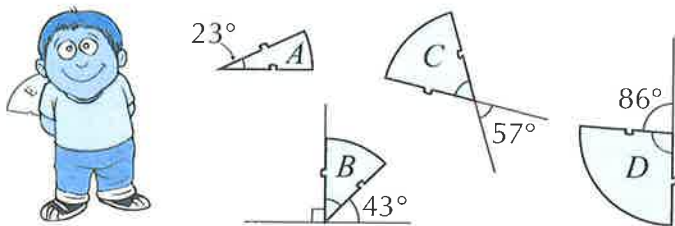
2. Find the missing angles.



3. Rahul is helping his cousin put together a circle that has been cut into five pieces (A, B, C, D and E). Piece E has gone missing.

You'll need to work out the angles inside the other pieces first.

Use the information below to work out the angle inside the missing piece E.



How did you do?

I agree with the title — angles rule! Oh, wait... Nothing too complicated here. Learn the rules and you're good to go. You should now be able to:

- Use angle rules to find missing angles on a straight line.
- Use angle rules to find missing angles around a point.



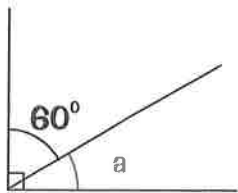
Angle Rules



Nope, still haven't got rid of those darn angles... if you don't know those important angle rules yet, get learning — you'll need them for this page.

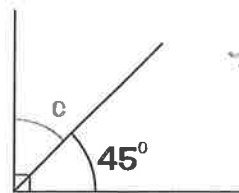
Q1 Work out the lettered angles:

a)



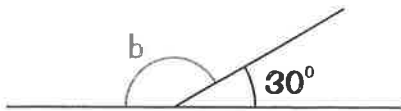
$a = \dots\dots\dots$

c)



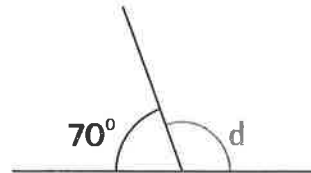
$c = \dots\dots\dots$

b)



$b = \dots\dots\dots$

d)



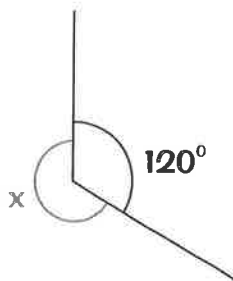
$d = \dots\dots\dots$

I said ANGLES!



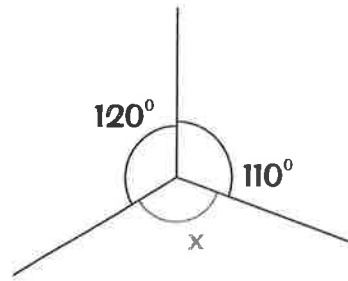
Q2 For each of the following work out the size of the angle marked x .

a)



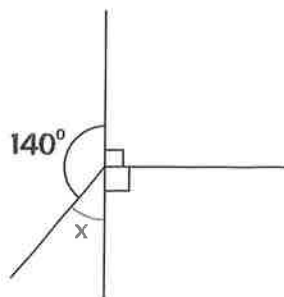
$x = \dots\dots\dots$

c)



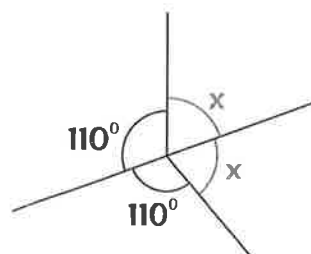
$x = \dots\dots\dots$

b)



$x = \dots\dots\dots$

d)



$x = \dots\dots\dots$

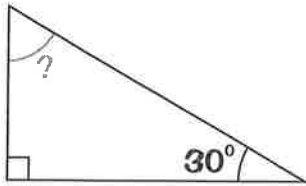
Angle Rules



The tricky bit is remembering the rules — then it's all just adding and subtracting.

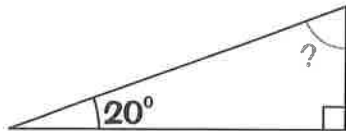
Q3 Work out the missing angles.

a)



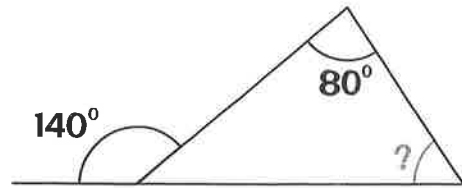
Missing angle =

b)



Missing angle =

c)



Missing angle =

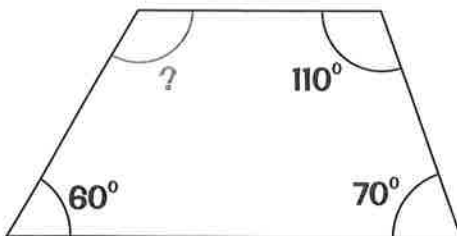
d)



Missing angle =

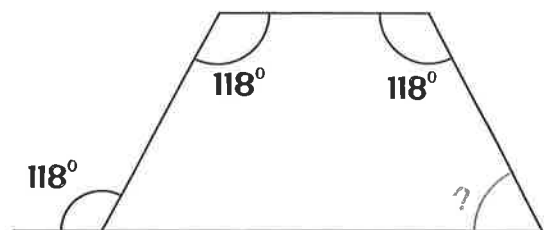
Q4 Find the missing angles.

a)



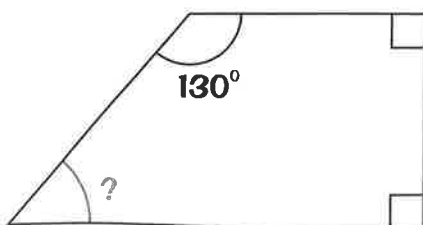
Missing angle =

c)



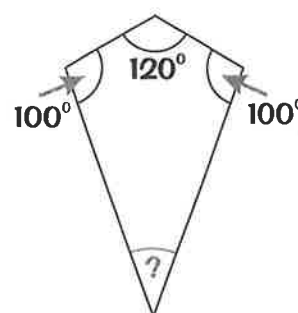
Missing angle =

b)



Missing angle =

d)

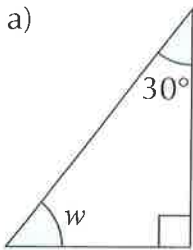


Missing angle =

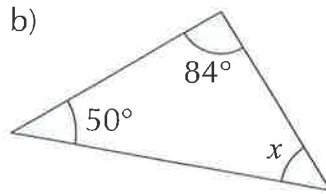
Angles in Triangles

1. Find the missing angles.

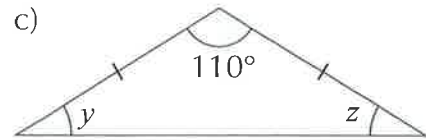
None of the diagrams on this page are drawn accurately.



$w = \dots\dots\dots^\circ$



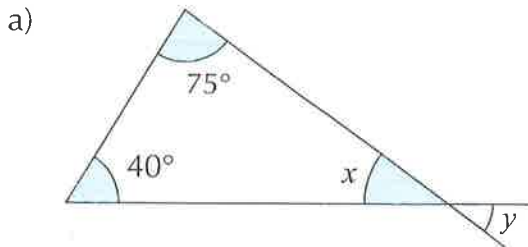
$x = \dots\dots\dots^\circ$



$y = \dots\dots\dots^\circ$

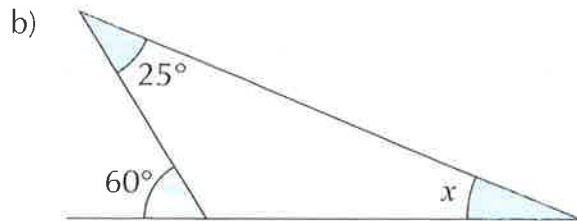
$z = \dots\dots\dots^\circ$

2. Work out the missing angles.



$x = \dots\dots\dots^\circ$

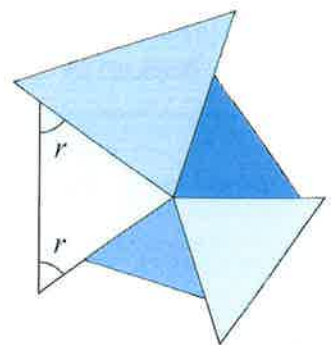
$y = \dots\dots\dots^\circ$



$x = \dots\dots\dots^\circ$

3. Aiesha has designed a logo for The Chips 'N' Dips Company. It is shown on the right.

The logo is made entirely from isosceles triangles. Each one has the same internal angles. Work out the size of r .



$r = \dots\dots\dots^\circ$

Hint: All the triangles in the logo meet at a point.

How did you do?

Some more triangle fun — now with added angles. After finishing this page, you should:

Be able to find a missing angle in a triangle using the sum of the angles.



Rounding

1. Look at Jo's shopping list on the right. Round each item to the nearest ten to help Jo work out how much she'll spend.

- 13 protractors
- 28 rulers
- 165 staples
- 131 inflatable globes

..... protractors rulers
 staples inflatable globes

2. Round each of the following decimals to the nearest whole number.

5.4 rounds to 3.8 rounds to 14.3 rounds to

3. Jasmin is 148.7 cm tall. What is Jasmin's height to the nearest cm?

..... cm

4. Fill in the gaps with '10', '100' or '1000'.

145 = 100 to the nearest 12 479 = 12 000 to the nearest
 129 = 130 to the nearest 40 009 = 40 010 to the nearest

5. Peter counts the number of apples that he sees growing on a tree. He then rounds this number to the nearest ten. The result is 30.



a) Is it possible that Peter counted exactly 27 apples? Explain your answer.

.....

b) What is the smallest number of apples that Peter could have counted? Explain your answer.

Think about which numbers round to 30 to the nearest ten.

.....

How did you do?

Always check what you're rounding to and you'll be a well-rounded mathematician. Before you go on to the next page, make sure that you can:

- | | |
|---|---|
| <input type="checkbox"/> Round numbers to the nearest whole number. | <input type="checkbox"/> Round numbers to the nearest ten. |
| <input type="checkbox"/> Round numbers to the nearest hundred. | <input type="checkbox"/> Round numbers to the nearest thousand. |



Rounding Numbers



Here are some more rounding questions — I know you've had loads already but every little helps, right? These shouldn't cause too many problems as long as you think about each question carefully.

Q6 Round the following to the nearest whole number:

- | | |
|---------------|---------------|
| a) 3.8 | d) 5.93 |
| b) 4.6 | e) 1.34 |
| c) 14.3 | f) 0.72 |

Q7 Round these numbers to the nearest 10:

- | | |
|-------------|--------------|
| a) 12 | d) 44 |
| b) 23 | e) 128 |
| c) 61 | f) 65 |



Q8 Round these numbers to the nearest 100:

- | | |
|--------------|---------------|
| a) 112 | d) 443 |
| b) 235 | e) 1285 |
| c) 616 | f) 653 |

Q9 Nutmeg United have just played 4 games within the space of a week. Below are the crowd sizes for each match. Round each figure to the nearest 1000.

- | |
|----------------|
| a) 13456 |
| b) 21822 |
| c) 16737 |
| d) 9742 |



Rounding Numbers



The key here is remembering the difference between 'decimal place' and 'significant figure'. Once you've learned that, have a crack at this page.

Q1 Round these numbers to 1 decimal place:

- | | |
|---------------|----------------|
| a) 0.34 | d) 1.34 |
| b) 0.67 | e) 2.84 |
| c) 0.23 | f) 45.98 |



Q2 Round each of these numbers to 2 decimal places:

- | | |
|------------------|------------------|
| a) 7.431 | d) 345.678 |
| b) 9.829 | e) 1.191 |
| c) 121.119 | f) 2.299 |

Q3 Round each of these numbers to 1 significant figure:

- | | |
|--------------|----------------|
| a) 789 | c) 0.256 |
| b) 623 | d) 0.838 |



Q4 Round each of these numbers to 2 significant figures:

- | | |
|---------------|-----------------|
| a) 153 | c) 0.0741 |
| b) 4860 | d) 3.26 |

Q5 Write these numbers correct to 3 significant figures:

- | | |
|-----------------|------------------|
| a) 6762 | c) 57.365 |
| b) 6974.5 | d) 0.03404 |



Solving Equations



Oh no, more letters. They definitely take a little time to get your head around but with a little practice you'll burn through these. You need to get x on its own, then voilà — out pops the answer.

Q1 Solve these equations:

a) $x + 3 = 11$

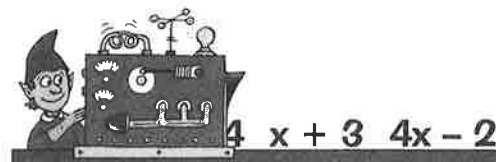
.....

b) $x + 19 = 23$

.....

c) $x - 6 = 13$

.....



Q2 Solve:

a) $4x = 20$

.....

b) $7x = 28$

.....

c) $2x = -18$

.....

You can always check your answer by sticking it back into the equation at the end and seeing if it works.

Q3 Solve the following:

a) $\frac{x}{2} = 22$

.....

b) $\frac{x}{7} = 3$

.....

c) $\frac{x}{5} = 8$

.....



Solving Equations

1. Find the value of each letter.

a) $a + 10 = 60$ $a = \dots\dots\dots$

b) $19 + b = 31$ $b = \dots\dots\dots$

c) $c - 16 = 20$ $c = \dots\dots\dots$

d) $d + 8 = 4$ $d = \dots\dots\dots$

2. Ellis needs help solving the equations below.
Draw lines to join each unknown with its value.

$4a = 12$

$5b = 25$

$\frac{c}{2} = 4$

$\frac{d}{3} = 3$

(a)

(b)

(c)

(d)

(8)

(9)

(3)

(5)

3. Solve the following equations.

a) $2a + 3 = 13$

b) $8b - 3 = 21$

c) $10c + 12 = 72$

d) $50d - 100 = 250$

$a = \dots\dots\dots$

$b = \dots\dots\dots$

$c = \dots\dots\dots$

$d = \dots\dots\dots$

4. Samira solves an equation to get $x = 3$.

Circle all the equations below that she could have solved.

$3x + 2 = 11$

$7x = 21$

$89 - x = 92$

$18x = 36$

$3x - 2 = 2$

$5x + 3 = 18$

5. Answer true (✓) or false (✗) to show whether the equations have the solution $x = 2$.

a) $7x = 12$

b) $3x - 3 = 3$

c) $5 - x = 4$

d) $8x + 9 = 25$

Solving Equations

6. Greg and Hannah shared a bag of popcorn whilst watching 'The Equatables' at the cinema. The bag contained 62 pieces of popcorn. Hannah ate n pieces, Greg ate $4n$ pieces and there were 7 pieces left over.

a) Circle the equation that could be used to find n .

$$n + 4 + 7 = 62$$

$$5n - 7 = 62$$

$$4n + 7 = 62$$

$$5n + 7 = 62$$

b) How many pieces of popcorn did Hannah eat?

.....

7. Draw a line to match each equation on the left to the equation on the right that, when solved, gives the same value for x .

$$3x - 2 = 4$$

$$3x - 5 = -2x$$

$$4x = 4$$

$$2x - 5 = 1$$

$$4x - 3 = 9$$

$$7x - 10 = 2x$$

8. Look at the equation in the box: $17x = 510$



Use it to write down the answers to the following, without solving the equation:

a) $17x + 31 = \dots\dots\dots$

b) $170x = \dots\dots\dots$

c) $1700x - 500 = \dots\dots\dots$

9. If $4x - 9 = 2x + 3$, find x .

$x = \dots\dots\dots$

How did you do?

Phew, that was a bit of a workout. Don't let the more complicated equations get you in a muddle — just go slowly and tackle it one step at a time. Take a second to make sure that you know how to:

- Solve equations with one unknown value.
- Rearrange equations into a form you can solve.

Solving Equations



Oh 'eck, more equations... This page is a bit trickier. Rearrange the equations until you've got something like $\frac{x}{5}$ or $3x$ alone on one side, then multiply or divide through to get on x its own.

Q4 Solve the following:

a) $2x + 1 = 7$

.....

b) $2x + 4 = 5$

.....

c) $5x - 9 = 41$

.....



Q5 Solve:

a) $\frac{x}{7} + 17 = 20$

.....

b) $\frac{x}{3} - 5 = 3$

.....

c) $\frac{x}{4} - 6 = -10$

.....

Q6 Solve these equations:

a) $11x + 4 = 6x + 29$

.....

b) $2x + 8 = 26 - 4x$

.....

c) $12x - 14 = 9x - 2$

.....

