

Name: _____

Class: _____

Teacher: _____

Year 10
Foundation
Term 4
Homework Booklet

Week 1

1.4 **Starting Six**



What is 35% of £130

Work out $£2.69 \times 25$

Write 160 as a product of prime factors

(a) Write 0.028 as a fraction

(b) Simplify your answer

Solve: $\frac{x}{3} = 2\frac{1}{2}$

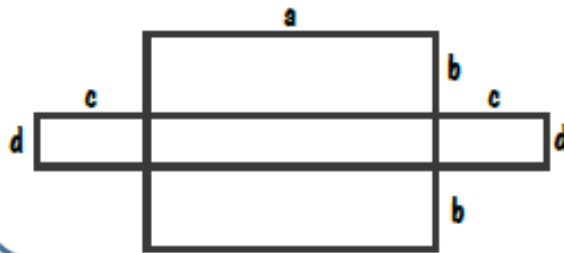
Factorise: $55 - 15b$

Solve: $9x - 5 = 6x + 7$

Factorise: $x^2 - 7x + 12$

Four numbers have a median of 11, a mean of 11 and a range of 14. What could they be?

Shade an area represented by: $(ad + cd)$



IN A COMPANY, THE RATIO OF THE NUMBER OF MEN TO THE NUMBER OF WOMEN IS 9 : 2

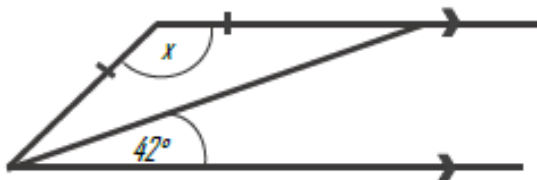
40% OF THE MEN ARE UNDER THE AGE OF 25

IF THERE ARE 100 WORKERS, HOW MANY MEN IN THE COMPANY ARE UNDER THE AGE OF 25?

Write the number of left handed girls to right handed boys as a ratio in its simplest form.

	Boys	Girls
Left	9	18
Right	30	20

AB and CD are parallel. Work out the size of angle x .



Expand:

a) $(2a + 2)(3a - 3)$

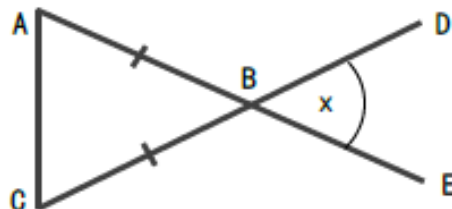
Factorise:

b) $x^2 - 9x + 18$

There are only red pens and green pens in a box. The ratio of the number of red pens in the box to the number of green pens in the box is 3 : 5

What percentage of the pens are green?

The angles in triangle ABC are in the ratio 4:4:1. Find Angle x .



A pancake recipe is made by mixing eggs, flour and milk in the ratio 1:6:3

What fraction is eggs?

$\frac{1}{3}$ $\frac{1}{10}$ $\frac{1}{6}$ $\frac{1}{9}$

Three straight lines are shown. Work out the value of x



Week 1

Match the word with its definition

Plot		Mark on a graph
Factorise		Present an informed opinion
Congruent		Use a mathematical instrument to find the size of a length or angle
Measure		Take out the common factor/s or into two brackets if it is a quadratic
Comment		Exactly the same size and shape

Spot the Mistake

Question 1:

$$\text{Solve } 4x - 7 = 23$$

Becky's answer:

$$4x - 7 = 23$$

$$4x = 16$$

Answer:

$$x = 4$$

Your answer:

What mistake has Becky made?

Question 2:

$$\text{Solve } 3(x + 6) = 39$$

Becky's answer:

Expand the brackets:

$$3x + 6 = 39$$

$$3x = 33$$

Answer:

$$x = 11$$

Your answer:

What mistake has Becky made?

Week 2

1.5 **Starting Six**



What is 35% of £170

Work out $£3.14 \times 22$

Write 170 as a product of prime factors

(a) Write 0.014 as a fraction

(b) Simplify your answer

Solve: $\frac{x}{5} = 2\frac{1}{2}$

Factorise: $14 - 7b$

Solve: $9x - 8 = 6x + 8$

Factorise: $x^2 + 9x + 18$

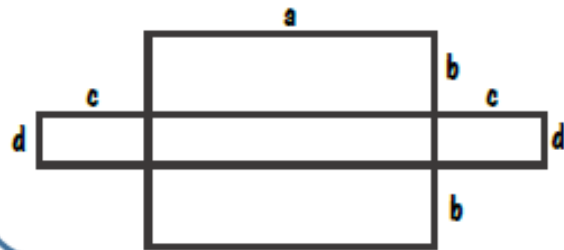
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Top Ten Topics



Four numbers have a median of 11, a mean of 11 and a range of 8. What could they be?

Shade an area represented by: $2(ab + cd)$



IN A COMPANY, THE RATIO OF THE NUMBER OF MEN TO THE NUMBER OF WOMEN IS 3 : 2

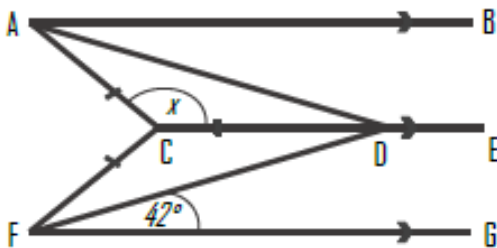
10% OF THE WOMEN ARE UNDER THE AGE OF 25
40% OF THE MEN ARE UNDER THE AGE OF 25

WHAT PERCENTAGE OF PEOPLE IN THE COMPANY ARE UNDER THE AGE OF 25?

Write the number of left handed girls as a fraction of the total students in its simplest form.

	Boys	Girls
Left	8	18
Right	30	20

AB, CDE and FG are parallel. Work out the size of angle x .



Expand:

a) $(2a - 2)(5a - 3)$

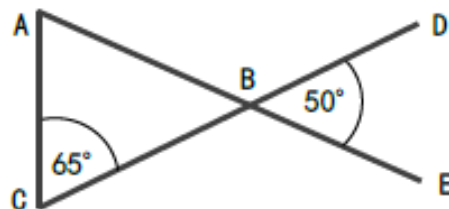
Factorise:

b) $x^2 + 9x - 22$

There are only red pens and green pens in a box. The ratio of the number of red pens in the box to the number of green pens in the box is 7 : 1

What percentage of the pens are red?

Prove that triangle ABC is an isosceles triangle.



A smoothie recipe is made by mixing blueberries, orange and spinach in the ratio 3:6:1

What fraction is orange?

- $\frac{3}{10}$ $\frac{3}{9}$ $\frac{3}{5}$ $\frac{3}{10}$

Three straight lines are shown. Work out the value of x



Week 2

Match the word with its definition

Rotate		Collect terms together or cancel down
Work out		Perform one or a set of steps or calculations to arrive at an answer
Solve		Move horizontally and vertically by a given vector
Simplify		Turn around a fixed point
Translate		Arrive at an answer using a numerical or algebraic method

Spot the Mistake

Question 1: Solve $11 - 2x = 16$	
<i>Becky's answer:</i>	<i>Your answer:</i>
$11 - 2x = 16$ $2x = 5$ Answer: $x = 2.5$	
<i>What mistake has Becky made?</i>	
Question 2: Solve $\frac{x}{5} - 8 = 7$	
<i>Becky's answer:</i>	<i>Your answer:</i>
$\frac{x}{5} - 8 = 7$ $\frac{x}{5} = 15$ Answer: $x = 3$	
<i>What mistake has Becky made?</i>	

Week 3

1.7 **Starting Six**



What is 35% of £190

Work out $£2.34 \times 7$

Write 120 as a product of prime factors

(a) Write 0.53 as a fraction

(b) Write $\frac{27}{4}$ as a mixed number

Solve: $\frac{x}{3} = 2\frac{1}{2}$

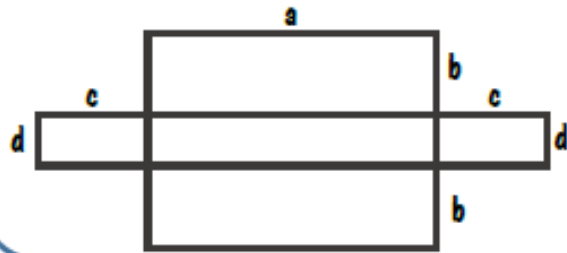
Factorise: $16 - 12m$

Solve: $8x - 6 = 3x + 4$

Factorise: $x^2 - 4x - 12$

Four numbers have a median of 6, a mean of 6 and a range of 7. The numbers are not integers. What could they be?

Shade an approximate area for: $\frac{1}{2}(ab + cd)$



IN A COMPANY, THE RATIO OF THE NUMBER OF MEN TO THE NUMBER OF WOMEN IS 9 : 7

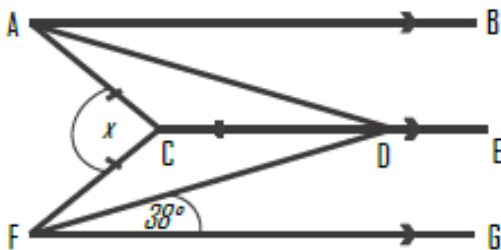
20% OF THE WOMEN ARE UNDER THE AGE OF 30
40% OF THE MEN ARE UNDER THE AGE OF 30

WHAT PERCENTAGE OF PEOPLE IN THE COMPANY ARE UNDER THE AGE OF 30?

Write the number of right handed boys as a fraction of the total students in its simplest form.

	Boys	Girls
Left	11	29
Right	21	26

AB, CDE and FG are parallel. Work out the size of angle x .



Expand:

a) $(2a - 4)(3a - 5)$

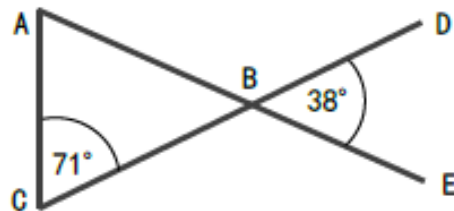
Factorise:

b) $x^2 - 9$

There are orange, yellow and blue sweets in a box. The ratio of the number of orange, yellow and blue sweets in the box is 7 : 3 : 5

What percentage of the sweets are yellow?

Prove that triangle ABC is an isosceles triangle.

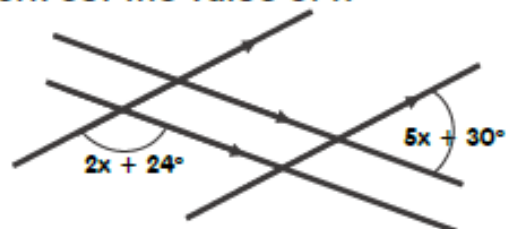


A smoothie recipe is made by mixing mango, berries and kale in the ratio 4:2:3

What fraction is not equivalent to kale?

$\frac{2}{6}$ $\frac{3}{9}$ $\frac{4}{16}$ $\frac{1}{3}$

Four straight lines are shown. Work out the value of x



Week 3

Match the word with its definition

Credit		Data that can only take certain values
Continuous Data		Money put into a bank account
Probability		Data that can take any value
Debit		The chance that something will happen
Discrete Data		Money taken out of a bank account

Spot the Mistake

Question 1: Solve $9 - 2x = 3(x - 2)$	
<i>Becky's answer:</i>	<i>Your answer:</i>
Expand the brackets: $9 - 2x = 3x - 6$ $9 = x - 6$ Answer: $x = 15$	
<i>What mistake has Becky made?</i>	
Question 2: Which of the lengths below are equal? $0.66m$ $6.6cm$ $660mm$	
<i>David's answer:</i>	<i>Your answer:</i>
Convert all to metres: $0.66m = 0.66m$ $6.6cm = 0.66m$ $660mm = 6.6m$ Answer: $0.66m$ and $6.6cm$	
<i>What mistake has David made?</i>	

Week 4

1.8 Starting Six



What is 35% of £150

Work out $£2.54 \times 9$

Write 110 as a product of prime factors

(a) Write 0.47 as a fraction

(b) Write $\frac{29}{5}$ as a mixed number

Solve: $\frac{x}{5} = 2\frac{1}{2}$

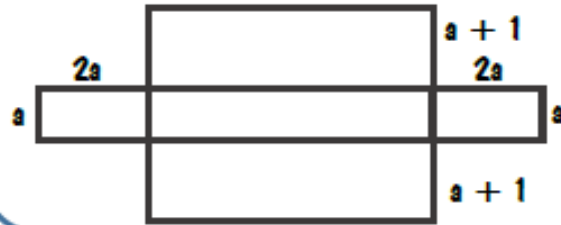
Factorise: $18 - 9m$

Solve: $9x - 10 = 3x + 8$

Factorise: $x^2 - 4x + 4$

Four numbers have a median of 4, a mean of 5 and a range of 9. The numbers are not integers. What could they be?

Shade an area represented by: $a^2 + 3a + 2$



IN A COMPANY, THE RATIO OF THE NUMBER OF MEN TO THE NUMBER OF WOMEN IS 13 : 7

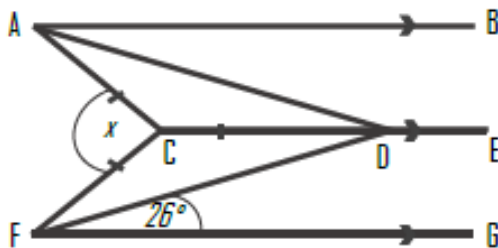
40% OF THE WOMEN ARE OVER THE AGE OF 30
40% OF THE MEN ARE UNDER THE AGE OF 30

WHAT PERCENTAGE OF PEOPLE IN THE COMPANY ARE UNDER THE AGE OF 30?

Write the number of left handed boys to girls as a ratio in its simplest form.

	Boys	Girls
Left	27	63
Right	59	18

AB, CD and FG are parallel. Work out the size of angle x .



Expand:

a) $(2a + 1)(3a - 1)$

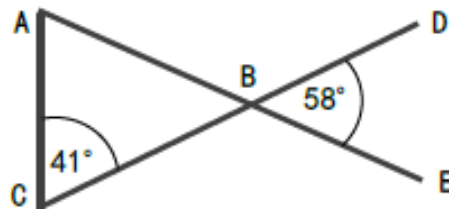
Factorise:

b) $x^2 - 25$

There are orange, yellow and blue sweets in a box. The ratio of the number of orange, yellow and blue sweets in the box is 7 : 5 : 4

What percentage of the sweets are blue?

Prove that triangle ABC is not an isosceles triangle.

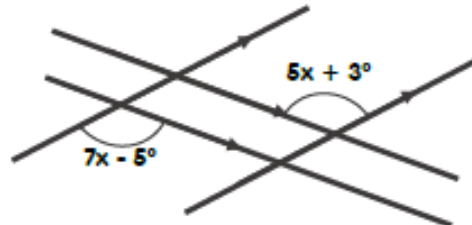


A smoothie recipe is made by mixing ice, orange and beetroot in the ratio- 2:5:1

What fraction is not equivalent to ice?

$\frac{3}{12}$ $\frac{5}{20}$ $\frac{6}{18}$ $\frac{1}{4}$

Four straight lines are shown. Work out the value of x



Week 4

Match the word with its definition

Prism		The connection between the sides of a right-angled triangle
Perimeter		The distance around a 2D shape
Polygon		A ratio out of 100
Percent		A solid object with two identical ends and flat sides
Pythagoras' Theorem		A 2D shape with straight sides

Spot the mistake

Question 1:

Adam has 270 millilitres of drink remaining.
Brittany has 2.8 centilitres of drink remaining.
Chloe has 0.26 litres of drink remaining.
Who has the most drink left?

<i>David's answer:</i>	<i>Your answer:</i>
Convert all to millilitres: $270ml = 270ml$ $2.8cl = 280ml$ $0.26l = 260ml$ Answer: $2.8cl$	

What mistake has David made?

Question 2:

Terry's kitchen scales are only weighing in milligrams. He needs to weigh out 3.2 kilograms of potatoes. What should the scale read if he has converted correctly?

<i>David's answer:</i>	<i>Your answer:</i>
$3.2kg = 3200g$ Answer: 320,000mg	

What mistake has David made?

Week 5

1.9 **Starting Six**



What is 35% of £85

Work out $£0.59 \times 25$

Write 104 as a product of prime factors

(a) Write 0.24 as a fraction

(b) Work out $\frac{3}{5} + \frac{2}{3}$

Solve: $\frac{x}{3} = 3\frac{1}{2}$

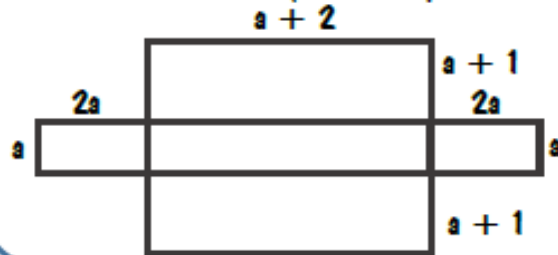
Factorise: $18m - 9$

Solve: $13x - 12 = 8x + 8$

Factorise: $x^2 - 7x - 18$

Four numbers have a median of 6, a mean of 6 and a range of 4. The numbers are not integers. What could they be?

Shade an area represented by: $4a^2$



IN A COMPANY, THE RATIO OF THE NUMBER OF MEN TO THE NUMBER OF WOMEN IS 11 : 9

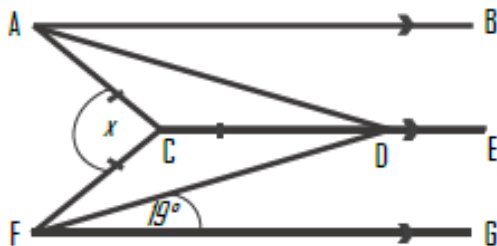
20% OF THE WOMEN ARE OVER THE AGE OF 30
80% OF THE MEN ARE UNDER THE AGE OF 30

WHAT PERCENTAGE OF PEOPLE IN THE COMPANY ARE OVER THE AGE OF 30?

Write the number of left handed girls to boys as a ratio in its simplest form.

	Boys	Girls
Left	39	26
Right	42	18

AB, CDE and FG are parallel. Work out the size of angle x .



Expand:

a) $(2a + 1)(2a - 1)$

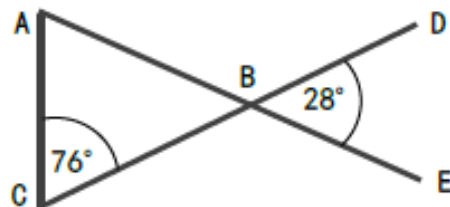
Factorise:

b) $x^2 - 49$

There are orange, yellow and blue sweets in a box. The ratio of the number of orange, yellow and blue sweets in the box is 3 : 13 : 4

What percentage of the sweets are orange?

Prove that triangle ABC is an isosceles triangle.

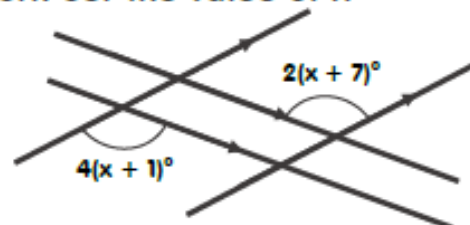


A drink recipe is made by mixing ice, apple and cinnamon in the ratio- 3:6:1

What fraction is not equivalent to apple?

$\frac{9}{15}$ $\frac{27}{45}$ $\frac{24}{35}$ $\frac{12}{18}$

Four straight lines are shown. Work out the value of x



Week 5

Match the word with its definition

Radius		The difference between the lowest and highest values
Counterexample		Make a number simpler but keeping its value close to what it was
Circumference		The distance from the centre to the circumference of a circle
Round		The distance around the edge of a circle
Range		An example that disproves a statement

Spot the mistake

Question 1:

Julie completes a run in three parts, listed below:

1720 metres

63580 centimetres

4.2 kilometres

The distance she runs in each part is measured by her phone, however the settings keep changing. How far did she run in kilometres in total?

David's answer:

Your answer:

Add them up:
 $1720 + 63580 + 4.2$
Answer: 65304.2

What mistake has David made?

Question 2:

Jason has built a "metre cube" out of centimetre cubes.

How many centimetre cubes did Jason use to build his "metre cube"?

David's answer:

Your answer:

There are 100 centimetres in a metre.
Answer:
100

What mistake has David made?

Week 6

2.0 **Starting Six**



What is 45% of £130

Work out $£2.59 \times 17$

Write 360 as a product of prime factors

(a) Write 0.201 as a fraction

(b) Work out $\frac{8}{9} \times \frac{2}{5}$

Solve: $4x + 9 = 21$

Factorise: $12y - 18$

Solve: $16x + 4 = 8x + 8$

Factorise: $x^2 - 13x + 22$

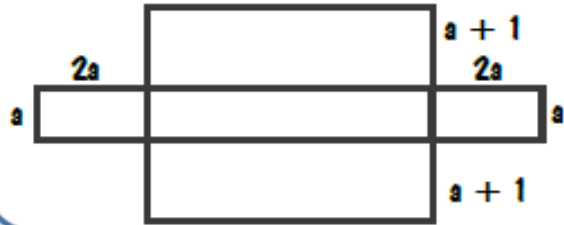
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Top Ten Topics



Four numbers have a median of 6, a mean of 6 and a range of 1. The numbers are not integers. What could they be?

Shade an area represented by: $a^2 + 2a$



IN A COMPANY, THE RATIO OF THE NUMBER OF MEN TO THE NUMBER OF WOMEN IS 11 : 9

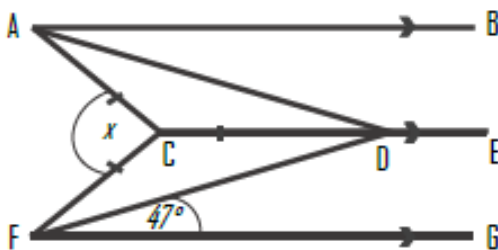
20% OF THE WOMEN ARE UNDER THE AGE OF 30
80% OF THE MEN ARE OVER THE AGE OF 30

WHAT PERCENTAGE OF PEOPLE IN THE COMPANY ARE OVER THE AGE OF 30?

Write the number of left handed girls to boys as a ratio in its simplest form.

	Boys	Girls
Left	59	48
Right	21	34

AB, CDE and FG are parallel. Work out the size of angle x .



Expand:

a) $(3a + 2)(3a - 2)$

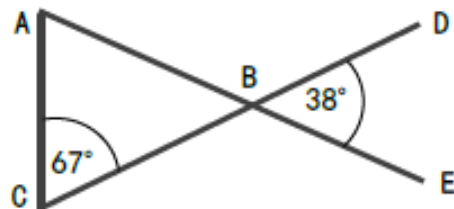
Factorise:

b) $x^2 - 81$

There are orange, yellow and blue sweets in a box. The ratio of the number of orange, yellow and blue sweets in the box is 3 : 7 : 4

What is the probability of picking a yellow sweet?

Prove that triangle ABC is a scalene triangle.

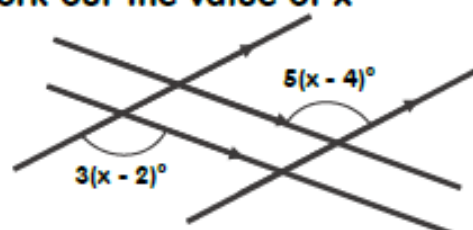


A drink is made by mixing coffee, sugar syrup and cream in the ratio 2:4:1

What fraction is equivalent to coffee?

$\frac{16}{54}$ $\frac{12}{26}$ $\frac{20}{35}$ $\frac{2}{6}$

Four straight lines are shown. Work out the value of x



Week 6

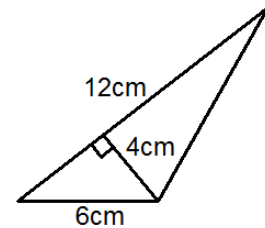
Match the word with its definition

Ratio		A value when multiplied by itself gives the number
Square number		How steep a line is
Scale		The relative sizes of two or more values
Gradient		The result of multiplying an integer by itself
Square root		The ratio of the length in a drawing to the length on the real thing

Spot the mistake

Question 1:

Find the area of the triangle below:



Isaac's answer:

To calculate the area of a triangle:

$$\text{Area} = \frac{1}{2}bh = \frac{1}{2} \times 12 \times 6$$

Answer:

$$36\text{cm}^2$$

Your answer:

What mistake has Isaac made?

Question 2:

Simplify 36: 24 giving your answer in its simplest form.

Gary's answer:

Both numbers are even so I can divide by 2.

Answer is

18: 12

Your answer:

What mistake has Gary made?