

GCSE Mathematics

ESSENTIAL REVISION  
QUESTIONS

Maths Watch  
**Foundation**  
Book

*with answers to T questions*

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# CONTENTS

## Grades

G to E ..... 3 to 20

D to C ..... 21 to 58

# 43 Essential Questions at E to G

(All Non-Calculator)

- 1T)** a) Write the number **five thousand seven hundred and ninety two** in figures.  
 b) Write the number 7040 in words.  
 c) What is the value of the 6 in the number 16042?

## Grades E to G Clip 1

- 1S)** a) Write the number **two thousand five hundred and seventy** in figures.  
 b) Write the number 16309 in words.  
 c) What is the value of the 2 in the number 28473?

- 2T)** The pictogram shows information about some fruit that Sara buys.

Apples	
Bananas	
Oranges	

Key: represents 8 fruit

## Grades E to G Clip 42

- a) How many apples does she buy?  
 b) How many bananas does she buy?  
 c) Sara buys 12 oranges. Complete the pictogram.
- 2S)** The pictogram shows information about some fruit that Jane buys.

Apples	
Bananas	
Oranges	

Key: represents 12 fruit

- a) How many apples does she buy?  
 b) How many bananas does she buy?  
 c) Jane buys 21 oranges. Complete the pictogram.

- a) 5792  
 b) seven thousand and forty  
 c) six thousand

- a) 16 apples  
 b) 26 bananas  
 c) oranges

**3T)** Put these numbers in order of size starting with the smallest.

a) 18 6 178 34

b) 1.9 3.72 0.5 12.6

c) 3.08 3.5 2.99 2.9009

**3S)** Put these numbers in order of size starting with the smallest.

a) 12 134 96 18

b) 1.65 1.099 3.205 2.006

c) 4.999 5.001 3.862 3.799

Grades E to G  
Clip 2

a) 6 18 34 178

b) 0.5 1.9 3.72 12.6

c) 2.9009 2.99 3.08 3.5

**4T)** a) Harry buys a newspaper for 70p and a magazine for £2.99.

How much change does he get from a £5 note?

b) The total cost of two pens is 80p.

What is the cost in pounds of 5 of the pens?

Grades E to G Clip 11

**4S)** a) Fred buys a newspaper for 90p, a magazine for £3.50 and a pencil for 35p.

How much change does he get from a £10 note?

b) The total cost of three pens is 96p.

What is the cost in pounds of 4 of the pens?

a) £1.31

b) £2.00

**5T)** Here is a list of numbers:

2 4 5 6 7 8

From this list, write down

a) An odd number

b) A multiple of 3

c) A square number

d) A factor of 10

**5S)** Here is a list of numbers:

3 4 5 8 11 12

From this list, write down

a) A cube number

b) A multiple of 6

c) Three prime numbers

d) A factor of 22

Grades E to G  
Clip 9

a) 5 or 7

b) 6

c) 4

d) 2 or 5

**6T)** The numbers in this distance table are in km.

Hull			
100	Leeds		
162	73	Manchester	
110	60	65	Sheffield
63	40	118	95
York			

- a) What is the distance between Leeds and York?
- b) Which city is nearest to Hull?
- c) Which city is 118km from York?

Grades E to G  
Clip 24

- a) 40km
- b) York
- c) Manchester

**6S)** The numbers in this distance table are in km.

Alim			
127	Brow		
138	65	Thrum	
95	50	78	Gredge
103	32	125	85
Sork			

- a) What is the distance between Brow and Gredge?
- b) Which city is furthest from Sork?
- c) Which city is 78km from Thrum?

**7T)** Some plants are measured as follows:

10cm 15cm 12cm 11cm 12cm

- a) What is the mean height?
- b) What is the median height?
- c) What is the modal height?
- d) What is the range of heights?

Grades E to G  
Clip 41

- a) 12cm
- b) 12cm
- c) 12cm
- d) 5cm

**7S)** Some plants are measured as follows:

8cm 6cm 8cm 17cm 5cm 4cm

- a) What is the mean height?
- b) What is the median height?
- c) What is the modal height?
- d) What is the range of heights?

**8T)** 3 8 13 18 23

- a) Write down the next two terms of the sequence.
- b) If the 30th term is 148, what is the 31st term?

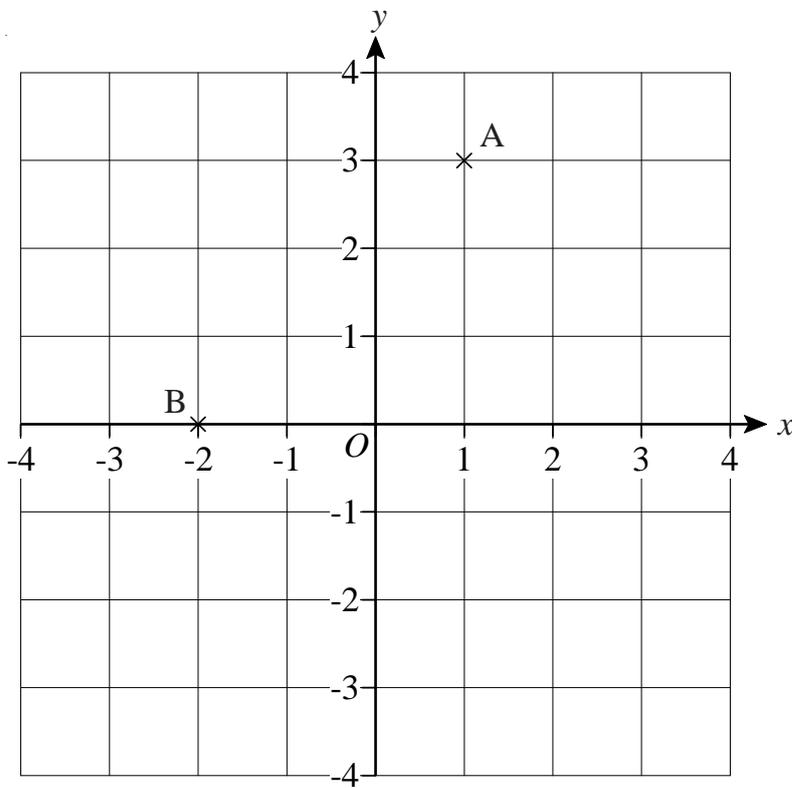
- a) 28 33
- b) 153

**8S)** 7 10 13 16 19

- a) Write down the next two terms of the sequence.
- b) What is the 10th term?
- c) If the 50th term is 154 what is the 49th term?

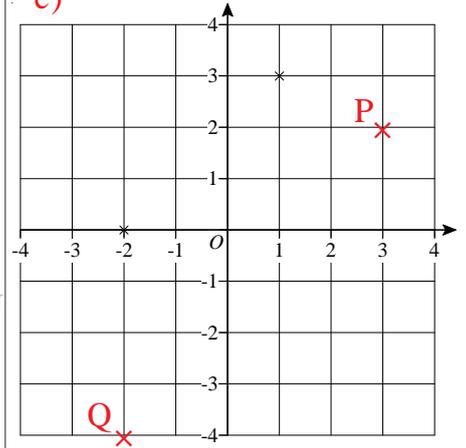
Grades E to G  
Clip 29

9T)

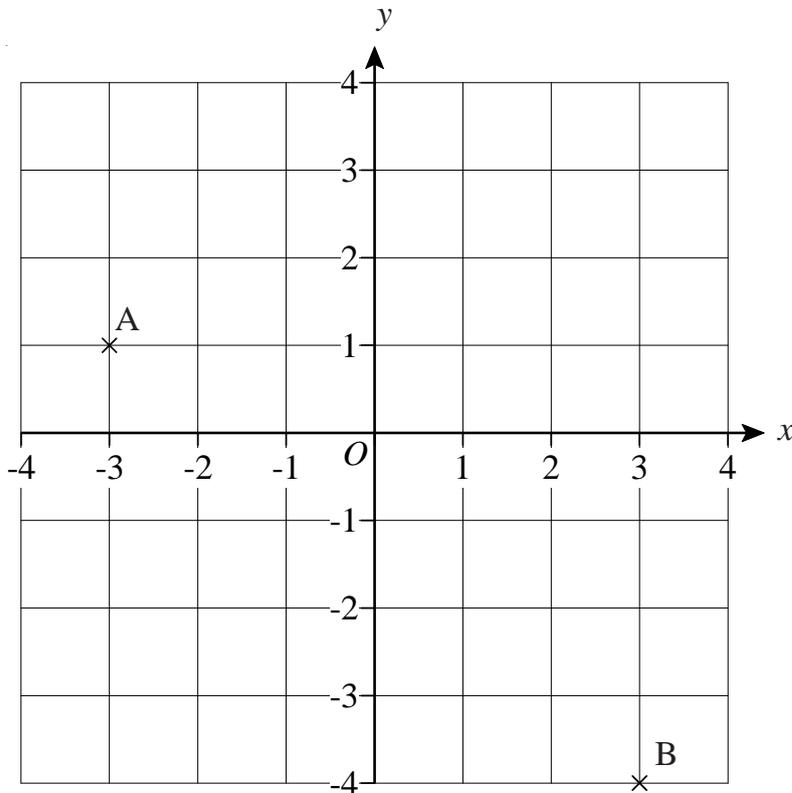


- a) Write down the coordinates of point A.
- b) Write down the coordinates of point B.
- c) On the grid, plot the point (3, 2) and label it P.
- d) On the grid, plot the point (-2, -4) and label it Q.

- a) (1, 3)
- b) (-2, 0)
- c)



9S)



- a) Write down the coordinates of point A.
- b) Write down the coordinates of point B.
- c) On the grid, plot the point (-1, 3) and label it P.
- d) On the grid, plot the point (0, -2) and label it Q.

**10T)** Here is part of a railway timetable.

Bristol	07 00	07 30	08 00
Bath	07 15	07 45	08 15
Chippenham	07 30	08 00	08 30
Swindon	07 50	08 20	08 50
Didcot	08 15	08 45	09 15
Reading	08 35	09 05	09 35
London Euston	08 55	09 25	09 55

- a) At what time does the 07 00 train from Bristol arrive at Didcot?
- b) How long does the train which leaves Bath at 07 45 take to travel to Swindon?
- c) If Jane gets to the Bath station at 08 03, how long will she have to wait for the next train to Reading?
- d) What is the journey time from Didcot to London?

Grades E to G Clip 25

**10S)** Here is part of a railway timetable.

Bristol	09 00	09 30	10 00
Bath	09 18	09 48	10 18
Chippenham	09 30	10 00	10 30
Swindon	09 50	10 20	10 50
Didcot	10 18	10 48	11 18
Reading	10 38	11 08	11 38
London Euston	10 56	11 26	11 56

- a) At what time does the 09 30 train from Bristol arrive at Reading?
- b) How long does the train which leaves Didcot at 10 48 take to travel to London Euston?
- c) If Jane gets to the Bath station at 09 29, how long will she have to wait for the next train to Reading?
- d) What is the journey time from Bath to London?

- 
- 11T)** a) Write the number 13896 to the nearest thousand.  
b) Write the number 12896 to the nearest hundred.  
c) Write the number 5497 to the nearest ten.

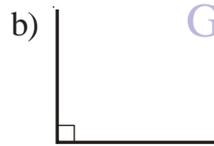
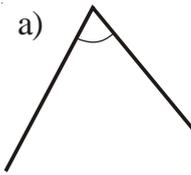
- 11S)** a) Write the number 9632 to the nearest ten.  
b) Write the number 754 to the nearest hundred.  
c) Write the number 201678 to the nearest thousand.

Grades E to G  
Clip 3

- a) 0815
- b) 35 minutes
- c) 12 minutes
- d) 40 minutes

- 
- a) 14000
  - b) 12900
  - c) 5500

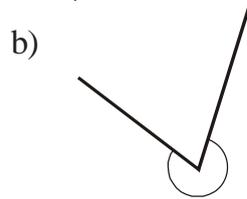
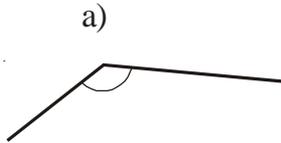
**12T)** What are the names of these angles?



Grades E to G  
Clip 31

- a) acute angle
- b) right angle

**12S)** What are the names of these angles?



- 13T)**
- a) The temperature in the morning is  $-3^{\circ}\text{C}$ . It rises by 12 degrees. What is the new temperature?
  - b) If a temperature of  $7^{\circ}\text{C}$  falls by 19 degrees, what is the new temperature?
  - c) How much would a temperature of  $-6^{\circ}\text{C}$  have to rise to reach  $4^{\circ}\text{C}$ ?

Grades E to G Clip 6

- a)  $9^{\circ}\text{C}$
- b)  $-12^{\circ}\text{C}$
- c)  $10^{\circ}\text{C}$

- 13S)**
- a) The temperature in the morning is  $-2^{\circ}\text{C}$ . It rises by 15 degrees. What is the new temperature?
  - b) If a temperature of  $-2^{\circ}\text{C}$  falls by 6 degrees, what is the new temperature?
  - c) How much would a temperature of  $-8^{\circ}\text{C}$  have to rise to reach  $13^{\circ}\text{C}$ ?

- 14T)**
- a) Express  $2 \times 2 \times 2$  as a power of 2.
  - b) Express  $4^2 \times 4^3$  as a power of 4.
  - c) Express  $3^7 \div 3^2$  as a power of 3.

Grades E to G  
Clip 26

- a)  $2^3$
- b)  $4^5$
- c)  $3^5$

- 14S)**
- a) Express  $4 \times 4 \times 4 \times 4 \times 4$  as a power of 4.
  - b) Express  $5^4 \times 5^6$  as a power of 5.
  - c) Express  $2^5 \div 2^3$  as a power of 2.

**15T)** What is the reciprocal of 7?

Grades E to G  
Clip 22

$$\frac{1}{7}$$

**15S)** What is the reciprocal of 5?

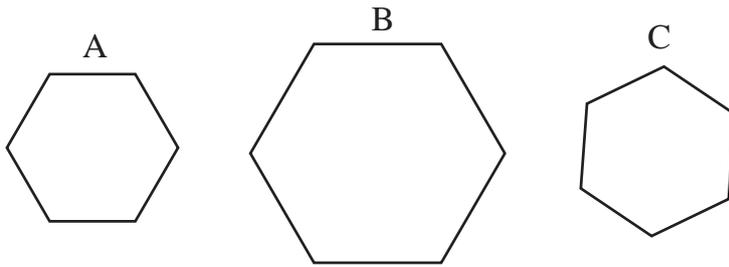
**16T)** What number is in the middle of 3 and 15?

Grades E to G  
Clip 21

9

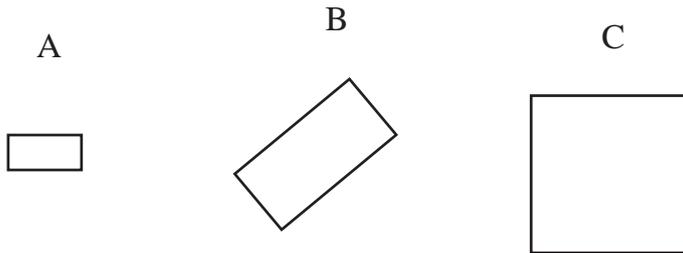
**16S)** What number is in the middle of 12 and 28?

**17T)** Two of the shapes below are congruent.  
Which ones?



A and C

**17S)** Two of the shapes below are similar.  
Which ones?



Grades E to G  
Clip 32

- 
- 18T)** a) Round the number 13.682 to 1 decimal place.  
b) Round the number 36499 to 1 significant figure.  
c) Round the number 0.004695 to 1 significant figure.

- a) 13.7  
b) 40000  
c) 0.005

- 18S)** a) Round the number 0.78632 to 2 decimal places.  
b) Round the number 51398 to 2 significant figures.  
c) Round the number 0.04695 to 2 significant figures.

Grades E to G Clip 20

- 
- 19T)** a) What is  $27 \times 16$ ?  
b) What is  $231 \times 38$ ?
- 19S)** a) What is  $51 \times 27$ ?  
b) What is  $406 \times 24$ ?

Grades E to G  
Clip 17

- a) 432  
b) 8778

- 
- 20T)** a) What is  $13 \times 10$ ?  
b) What is  $5.783 \times 100$ ?  
c) What is 10 lots of £2.26?  
d) What is  $9654 \div 10$ ?  
e) If 100 pencils cost £23 find the cost of 1 pencil.

Grades E to G  
Clip 5

- a) 130  
b) 578.3  
c) £22.60  
d) 965.4  
e) £0.23

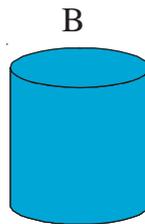
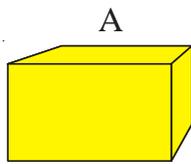
- 20S)** a) What is  $18 \times 10$ ?  
b) What is  $43.3 \times 100$ ?  
c) What is 10 lots of £13.78?  
d) What is  $5186 \div 100$ ?  
e) If 10 pencils cost £1.30 find the cost of 1 pencil.

- 21T)** a) If 3 bananas cost £1.14, how much will 5 of them cost?  
 b) If 7 pencils cost £1.68, how much will 10 cost?

- 21S)** a) If 6 bananas cost £2.46, how much will 8 of them cost?  
 b) If 9 pencils cost £3.06, how much will 10 cost?

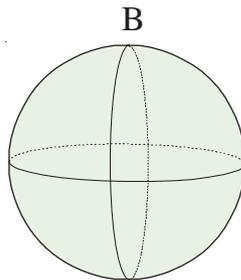
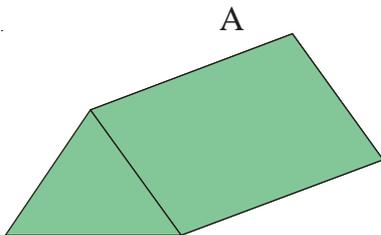
Grades E to G Clip 23

- 22T)** a) What are the names of shapes A and B?  
 b) How many vertices, edges and faces does shape A have?



Grades E to G Clip 37

- 22S)** a) What are the names of shapes A and B?  
 b) How many vertices, edges and faces does shape A have?



- 23T)** a)  $0.7 \times 0.1$   
 b)  $7 \times 0.2$   
 c)  $0.4 \times 0.5$   
 d)  $0.6 \div 0.3$   
 e)  $8 \div 0.2$

- 23S)** a)  $0.4 \times 0.6$   
 b)  $9 \times 0.8$   
 c)  $0.7 \times 0.8$   
 d)  $0.8 \div 0.02$   
 e)  $12 \div 0.3$

- 24T)** a)  $-6 \times -2$   
 b)  $4 \times -7$   
 c)  $-12 \div 3$

- 24S)** a)  $7 \times -4$   
 b)  $-10 \times -8$   
 c)  $-15 \div -5$

- a) £1.90  
 b) £2.40

- a) A cuboid B cylinder  
 b) 8 vertices  
 12 edges  
 6 faces

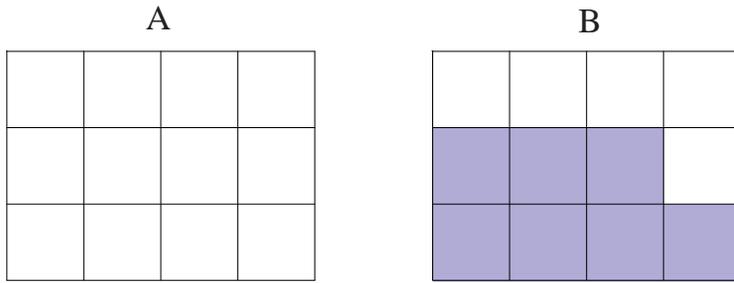
- a) 0.07  
 b) 1.4  
 c) 0.2  
 d) 2  
 e) 40

- a) 12  
 b) -28  
 c) -4

Grades E to G  
 Clip 19

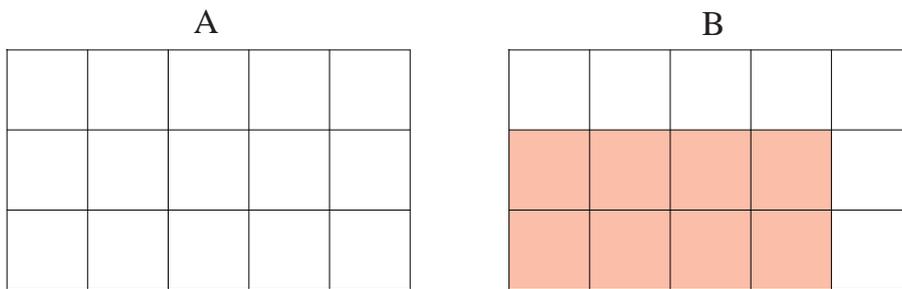
Grades E to G  
 Clip 7

- 25T)** a) Shade in two thirds of shape A.  
 b) What fraction of shape B is shaded?

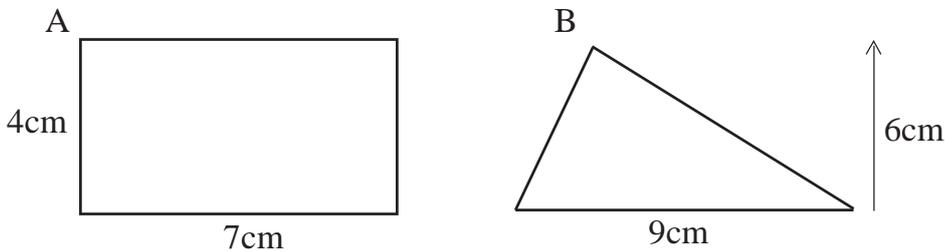


Grades E to G Clip 12

- 25S)** a) Shade in three fifths of shape A.  
 b) What fraction of shape B is shaded?

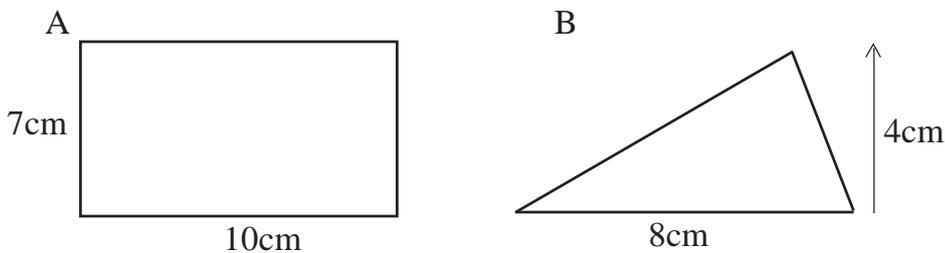


- 26T)** a) Find the area of these two shapes.



- b) Find the perimeter of the rectangle.

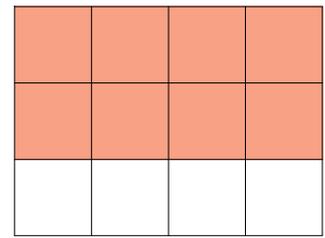
- 26S)** a) Find the area of these two shapes.



- b) Find the perimeter of the rectangle.

Grades E to G Clip 33

a)



b)  $\frac{7}{12}$

a) A  $28\text{cm}^2$  B  $27\text{cm}^2$

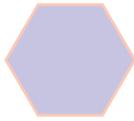
b) 22cm

- 27T)** a)  $278 + 65$   
 b)  $34.6 + 28$   
 c)  $12.34 + 9.712$   
 d)  $348 - 109$   
 e)  $£12.45 - £3.63$

Grades E to G  
 Clip 16

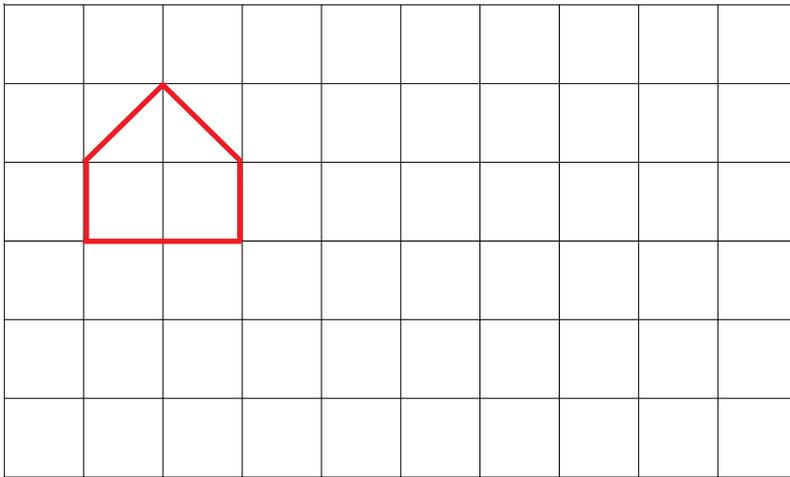
- 27S)** a)  $46 + 238$   
 b)  $7.82 + 35$   
 c)  $7.35 + 12.561$   
 d)  $782 - 194$   
 e)  $£138.60 - £26.83$

**28T)** Tessellate this shape. Draw at least ten shapes.



Grades E to G  
 Clip 38

**28S)** Show how the shape below tessellates.  
 You need to draw at least six more shapes.



**29T)** a)  $\frac{2}{3}$  of 24

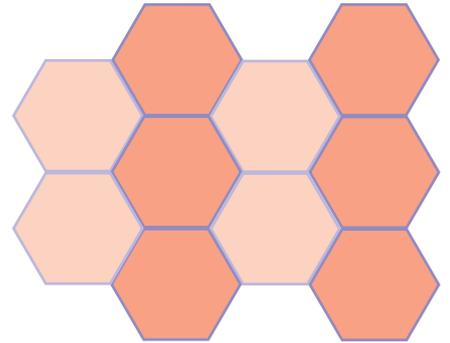
b)  $\frac{4}{5} \times 35$

**29S)** a)  $\frac{3}{7}$  of 21

b)  $\frac{5}{8} \times 48$

Grades E to G  
 Clip 8

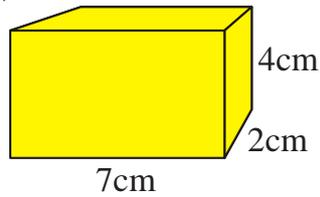
- a) 343  
 b) 62.6  
 c) 22.052  
 d) 239  
 e) £8.82



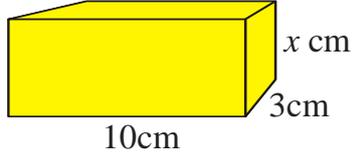
- a) 16  
 b) 28

Grades E to G  
Clip 34

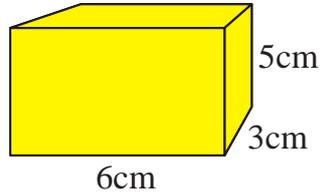
**30T)** a) Find the volume of this cuboid.



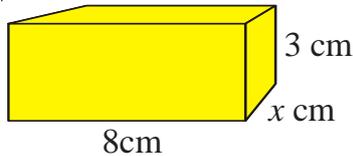
b) The volume of this cuboid is  $180\text{cm}^3$   
Work out its height.



**30S)** a) Find the volume of this cuboid.



b) The volume of this cuboid is  $48\text{cm}^3$   
Work out its depth.



a)  $56\text{cm}^3$

b) 6cm

**31T)** What number is the arrow pointing at?



Grades E to G  
Clip 4

**31S)** What number is the arrow pointing at?



**32T)** Place these numbers in order of size from low to high.

0.45    $\frac{2}{5}$    30%    $\frac{1}{4}$

Grades E to G  
Clip 13

**32S)** Place these numbers in order of size from low to high.

78%    $\frac{7}{10}$    0.79    $\frac{3}{4}$

92

$\frac{1}{4}$    30%    $\frac{2}{5}$    0.45

**33T)** Complete the table

× 4 - 3	
INPUT	OUTPUT
1	
2	
3	
10	
	57

Grades E to G  
Clip 30

× 4 - 3	
INPUT	OUTPUT
1	1
2	5
3	9
10	37
15	57

**33S)** Complete the table

× 3 + 2	
INPUT	OUTPUT
1	
2	
3	
10	
	41

**34T)** Complete the table

Fraction	Decimal	Percentage
$\frac{3}{4}$		
	0.4	
		60%
		90%

Fraction	Decimal	Percentage
$\frac{3}{4}$	0.75	75%
$\frac{2}{5}$	0.4	40%
$\frac{3}{5}$	0.6	60%
$\frac{9}{10}$	0.9	90%

**34S)** Complete the table

Fraction	Decimal	Percentage
$\frac{4}{5}$		
	0.25	
		50%
$\frac{2}{3}$		

Grades E to G  
Clip 10

**35T)** Estimate the answer to  $\frac{28 \times 63}{17}$

**35S)** Estimate the answer to  $\frac{103 \times 48}{4.8}$

Grades E to G Clip 14

- 36T)** a) Change 2.4m to cm.  
b) Change 5km to m.  
c) Change 3m<sup>2</sup> to cm<sup>2</sup>

Grades E to G  
Clip 35

- 36S)** a) Change 345cm to m.  
b) Change 2986m to km.  
c) Change 8km<sup>2</sup> to m<sup>2</sup>

**37T)** On the number line, put arrows to indicate the following probabilities:



- a) Getting a head if a coin is flipped.  
b) Getting a 1 or 2 if a dice is rolled.  
c) Snow falling in London in June.

**37S)** On the number line, put arrows to indicate the following probabilities:



- a) Getting an even number if a dice is rolled.  
b) Getting two heads if two coins are flipped.  
c) Rain falling in London sometime in the year.

Grades E to G Clip 40

**38T)** Use the information that  $223 \times 34 = 7582$  to work out

- a)  $22.3 \times 3.4$   
b)  $2.23 \times 340$   
c)  $7582 \div 34$

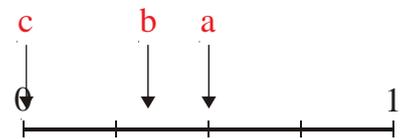
Grades E to G  
Clip 15

**38S)** Use the information that  $18 \times 112 = 2016$  to work out

- a)  $1.8 \times 1.12$   
b)  $180 \times 1120$   
c)  $201.6 \div 18$

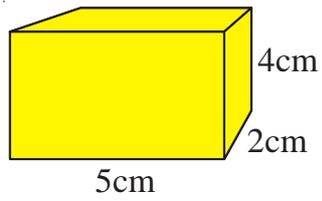
90

- a) 240cm  
b) 5000m  
c) 30000cm<sup>2</sup>

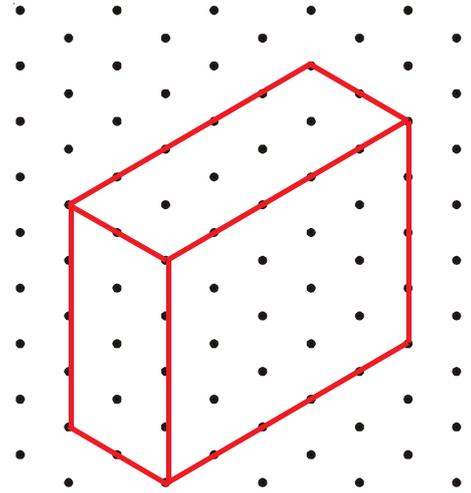
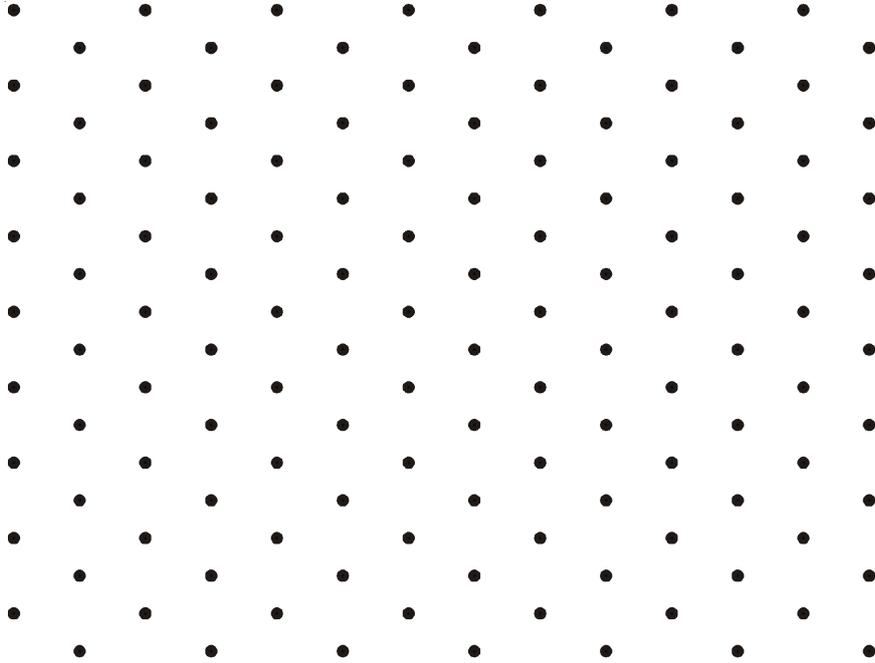


- a) 75.82  
b) 758.2  
c) 223

39T) Draw the following cuboid on the isometric grid.

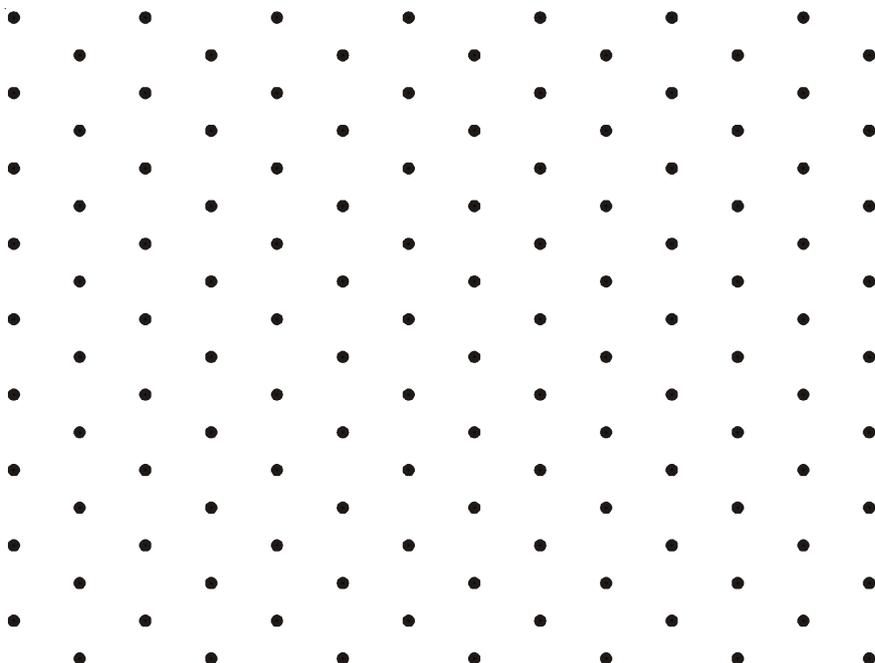
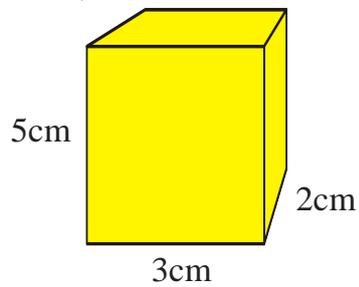


Grades E to G  
Clip 39



*other diagrams are also correct*

39S) Draw the following cuboid on the isometric grid.



**40T)** If 23 identical text books cost £56.35 how much will one text book cost?

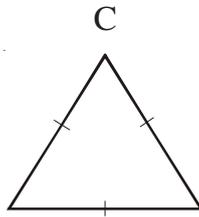
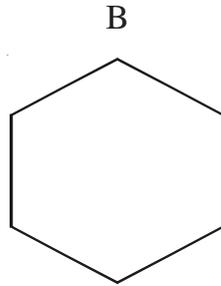
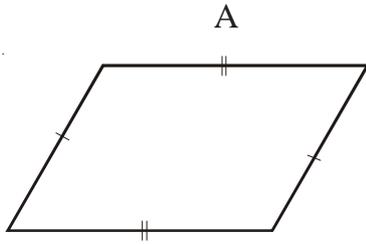
£2.45

**40S)** If 31 identical text books cost £173.60 how much will one text book cost?

### Grades E to G Clip 18

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**41T)** Name the following shapes:



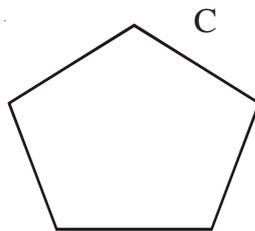
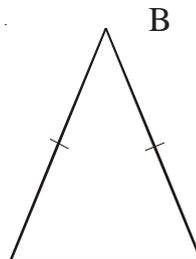
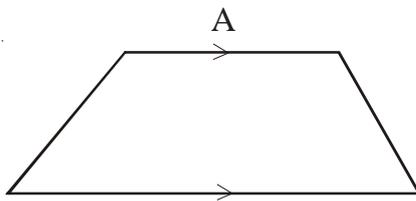
Grades E to G  
Clip 36

A Parallelogram

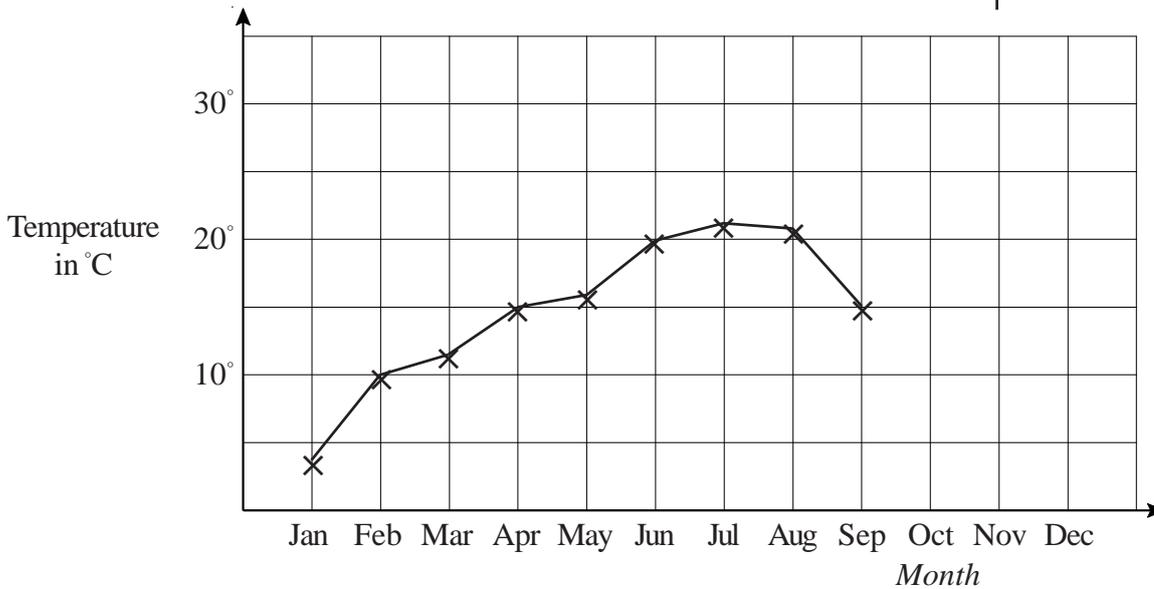
B Hexagon

C Equilateral triangle

**41S)** Name the following shapes:



**42T)** The graph shows the average temperature in a city for a year.

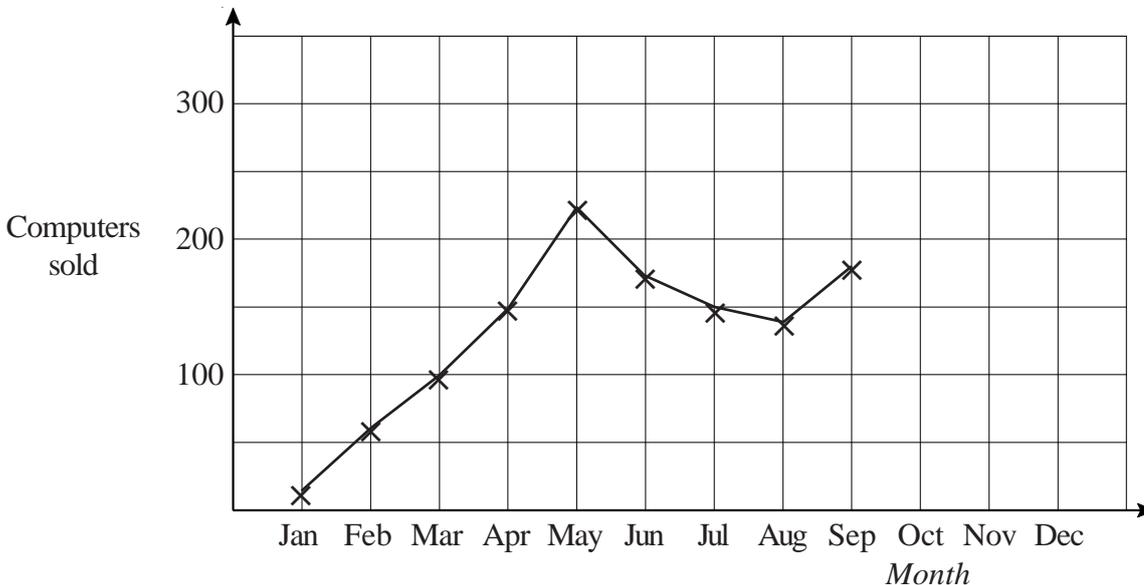


- a) Which month had the highest average temperature?
- b) How much warmer was it in June than February?
- c) The average temperatures in October, November and December were 10°C, 8°C and 3°C, respectively.  
Plot this information on the graph.

- a) July
- b) 10°C

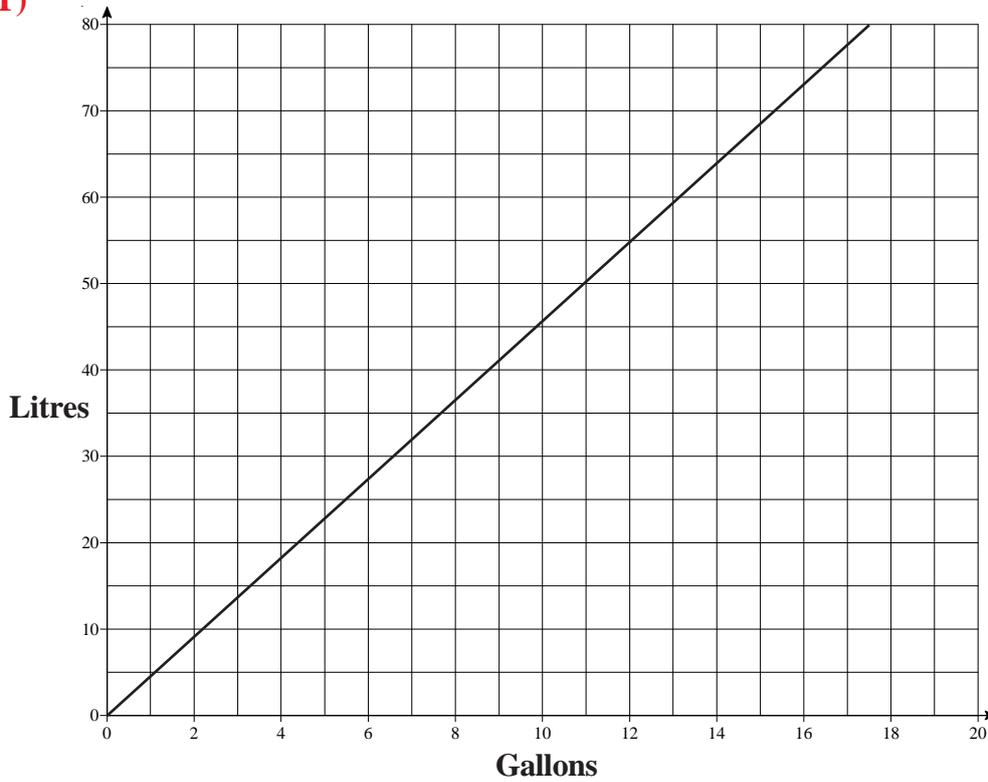
Grades E to G Clip 27

**42S)** The graph shows the average sales per month of a particular type of computer in a shop.



- a) What was the total number of sales in March, April and May?
- b) How many more computers were sold in June compared to March?
- c) The average sales in October, November and December were 250, 300 and 325.  
Plot this information on the graph.

43T)

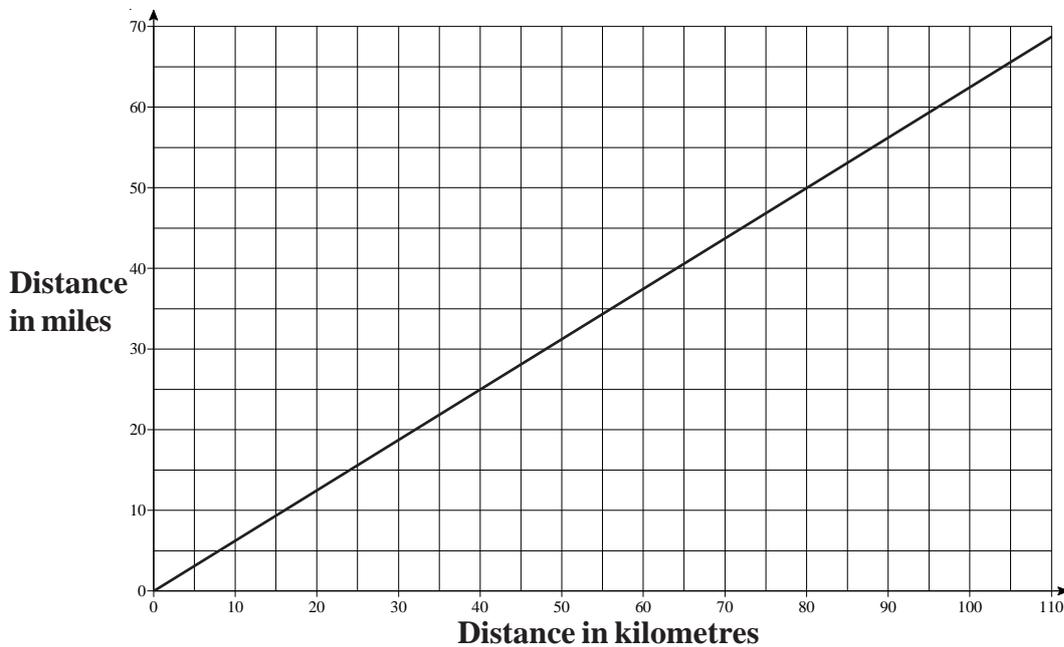


- a) Fred buys 12 gallons of petrol.  
How many litres is this?
- b) How many gallons is 70 litres?

Grades E to G  
Clip 43

- a) 55 litres
- b) approx. 15.3

43S)



- a) Change 60 miles to kilometres.
- b) How many miles is 90 km?
- c) How much more is 200 miles than 160 miles, in kilometres?



# 85 Essential Questions at C to D

(1 to 72 are non-calculator)

## Grade C Clip 102

- 1T)** a)  $4t + 7t$   
b)  $4t \times 7t$   
c)  $6y + 2w - 5y$   
d)  $6y \times 3t$   
e)  $4e^2 \times 3e^3$   
f)  $m^7 \div m^5$   
g)  $\frac{y^5}{y^2}$   
h)  $\frac{6y^4}{2y}$

- 1S)** a)  $3t + 8t$   
b)  $2t \times 9t$   
c)  $12y + 3w - 5y$   
d)  $4y \times 2t$   
e)  $3e^5 \times 2e^7$   
f)  $x^4 \div x^3$   
g)  $\frac{r^7}{r^3}$   
h)  $\frac{6r^5}{2r^3}$

- 2T)** a) Expand  $5(3y - 1)$   
b) Expand  $3x(2x + 4)$   
c) Expand and simplify  $2(3x + 5) - 3(4x - 2)$   
d) Expand and simplify  $5(2y - 3) + 2(y - 1)$   
e)  $(2x + 3)(x - 4)$

- 2S)** a) Expand  $3(2y - 4)$   
b) Expand  $5x(3x + 2)$   
c) Expand and simplify  $5(2x + 1) - 2(3x - 4)$   
d) Expand and simplify  $4(3y - 2) + 2(3y - 2)$   
e)  $(3x - 4)(2x - 1)$

- a)  $11t$   
b)  $28t^2$   
c)  $y + 2w$   
d)  $18yt$  or  $18ty$   
e)  $12e^5$   
f)  $m^2$   
g)  $y^3$   
h)  $3y^3$

- a)  $15y - 5$   
b)  $6x^2 + 12x$   
c)  $-6x + 16$   
d)  $12y - 17$   
e)  $2x^2 - 5x - 12$

## Grade C Clip 103

**3T)** Find the  $n$ th term of the following patterns

a) 3, 5, 7, 9, 11 .....

b) 8, 13, 18, 23, 28, .....

c) 9, 6, 3, 0, -3, .....

**3S)** Find the  $n$ th term of the following patterns

a) 2, 6, 10, 14, 18 .....

b) 7, 16, 25, 34, 43, .....

c) 5, 2, -1, -4, -7, .....

Grade C  
Clip 112

a)  $2n + 1$

b)  $5n + 3$

c)  $-3n + 12$

**4T)**

Number of smarties	Frequency	
29	2	
30	5	
31	2	
32	1	

- a) From the table above, find the mean number of smarties in a tube.  
b) Find the median number of smarties in a tube.

a) 30.2

b) 30

Grade C Clip 133

**4S)**

Number of smarties	Frequency	
29	2	
30	1	
31	5	
32	2	

- a) From the table above, find the mean number of smarties in a tube.  
b) Find the median number of smarties in a tube.

**5T)** Factorise the following:

- a)  $2x + 6$
- b)  $2x + 8$
- c)  $2x + 12$
- d)  $3x + 6$
- e)  $x^2 + x$
- f)  $2x^2 - 6x$
- g)  $9h^2 + 6h$
- h)  $8x^2 - 10x$

## Grade C Clip 104

- a)  $2(x + 3)$
- b)  $2(x + 4)$
- c)  $2(x + 6)$
- d)  $3(x + 2)$
- e)  $x(x + 1)$
- f)  $2x(x - 3)$
- g)  $3h(3h + 2)$
- h)  $2x(4x - 5)$

**5S)** Factorise the following:

- a)  $2t + 10$
- b)  $3m - 12$
- c)  $4y + 8$
- d)  $2x^2 + 6$
- e)  $t^2 + t$
- f)  $5t^2 + 10t$
- g)  $7t^2 - 14t$
- h)  $9h^2 - 30h$

- 
- 6T)** a) If a piece of wood is measured as 8cm to the nearest cm, what is the greatest possible length and the least possible length?
- b) If a piece of wood is measured as 19.8cm to the nearest tenth of a cm, what is the greatest possible length and the least possible length?

- 
- a) Greatest is 8.5cm  
Least is 7.5cm
- b) Greatest is 19.85cm  
Least is 19.75cm

## Grade C Clip 125

- 6S)** a) If a piece of wood is measured as 5cm to the nearest cm, what is the greatest possible length and the least possible length?
- b) If a piece of wood is measured as 6.7cm to the nearest tenth of a cm, what is the greatest possible length and the least possible length?

## Grade D Clip 66

- 7T)** a) If  $a = 3$  and  $t = -2$  find the value of
- (i)  $3a$
  - (ii)  $a^2$
  - (iii)  $5a^2$
  - (iv)  $4a - 2t$
  - (v)  $2(3a + t)$
  - (vi)  $\frac{4a - t}{7}$
- b) Colin said “when  $x = 3$ , then the value of  $4x^2$  is 144”  
Sue said “when  $x = 3$ , then the value of  $4x^2$  is 36”  
Who was right? Explain why.

- 7S)** a) If  $a = 4$  and  $t = -5$  find the value of
- (i)  $3a$
  - (ii)  $a^2$
  - (iii)  $5a^2$
  - (iv)  $4a - 2t$
  - (v)  $2(3a + t)$
  - (vi)  $\frac{4a - t}{7}$
- b) Colin said “when  $x = 5$ , then the value of  $4x^2$  is 400”  
Sue said “when  $x = 5$ , then the value of  $4x^2$  is 100”  
Who was right? Explain why

- a) (i) 9  
(ii) 9  
(iii) 45  
(iv) 16  
(v) 14  
(vi) 2
- b) Sue because  
 $4x^2$  is  $4 \times x^2$

- 
- 8T)** a) Write 2340000 in standard form.  
b) Write 0.00042 in standard form.  
c) Write  $7.8 \times 10^6$  as a normal number.  
d) Write  $4.71 \times 10^{-5}$  as a normal number.

## Grade C Clip 97

- 8S)** a) Write 630000000 in standard form.  
b) Write 0.00000715 in standard form.  
c) Write  $9.17 \times 10^5$  as a normal number.  
d) Write  $8.23 \times 10^{-6}$  as a normal number.

- 
- a)  $2.34 \times 10^6$   
b)  $4.2 \times 10^{-4}$   
c) 7800000  
d) 0.0000471

**9T)** Write the following numbers as the product of their prime factors

- a) 48
- b) 60
- c) Find the Highest Common Factor of 48 and 60
- d) Find the Lowest Common Multiple of 48 and 60

## Grade C Clips 95 & 96

**9S)** Write the following numbers as the product of their prime factors

- a) 90
- b) 120
- c) Find the Highest Common Factor of 90 and 120
- d) Find the Lowest Common Multiple of 90 and 120

- a)  $2 \times 2 \times 2 \times 2 \times 3$
- b)  $2 \times 2 \times 3 \times 5$
- c) 12
- d) 240

- 
- 10T)** a) Draw an angle of 70 degrees and then use ruler and compasses to bisect it.
- b) Draw a line of length 9cm and then bisect it using compasses.
- c) Use compasses to draw a triangle ABC with AB equal to 9cm, AC 7cm and BC 4cm

- 10S)** a) Draw an angle of 60 degrees and then use ruler and compasses to bisect it.
- b) Draw a line of length 11cm and then bisect it using compasses.
- c) Use compasses to draw an isosceles triangle with the base equal to 8cm and the other two sides of length 12cm

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Grade C Clip 127

Grade C Clip 129

Grade D Clip 80

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**11T)** What is  $2 \times 5 + 7 \times 3$ ?

Grade D  
Clip 59

---

31

**11S)** Work out the answer to  $38 - 3 \times 4$

---

**12T)** What is  $2.3 \times 0.15$ ?

Grade D  
Clip 60

---

0.345

**12S)** What is  $2.7 \times 0.13$ ?

---

**13T)**  $-3 \leq x < 4$

Grade C Clip 108

x is an integer. Write down all the possible values.

---

$-3, -2, -1, 0, 1, 2, 3$

**13S)**  $-2 \leq x \leq 3$

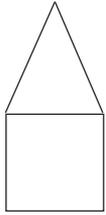
x is an integer. Write down all the possible values.

**14T)** Here are the front elevation, side elevation and the plan of a 3-D shape.

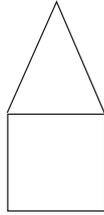
Draw a sketch of the 3-D shape.

## Grade D Clip 81

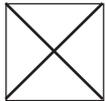
Front elevation



Side elevation



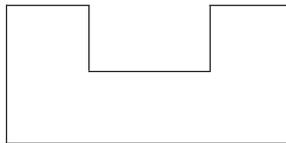
Plan



**14S)** Here are the front elevation, side elevation and the plan of a 3-D shape.

Draw a sketch of the 3-D shape.

Front elevation



Side elevation



Plan



**15T)** a) Work out  $\frac{3}{10}$  of 600

b) Work out  $\frac{5}{8}$  of 800

c) Work out  $\frac{5}{7} \times 42$

## Grade D Clip 55

a) 180

b) 500

c) 30

**15S)** a) Work out  $\frac{7}{10}$  of 400

b) Work out  $\frac{2}{9}$  of 900

c) Work out  $\frac{3}{8} \times 56$

**16T)** If you share out £240 between Alice and Bill in the ratio 5 : 3, how much more does Alice get compared with Bill?

## Grade C Clip 94

**16S)** If you share out £60 between Alice and Bill in the ratio 2 : 3, how much does each of them get?

£60

---

**17T)** Sara and Fred share tips from their job in the ratio 2 : 5. If Fred receives £35 how much does Sara get?

## Grade C Clip 94

**17S)** Sara and Fred share tips from their job in the ratio 3 : 4. If Sara receives £18 how much does Fred get?

£14

---

**18T)** Some plant heights are measured as shown in the table, below.

Height in cm	Frequency		
$0 < h \leq 20$	4		
$20 < h \leq 40$	3		
$40 < h \leq 60$	2		
$60 < h \leq 80$	1		

- a) Find an estimate for the mean height of a plant.  
b) In which interval does the median height lie?

- a) 30  
b)  $20 < h \leq 40$

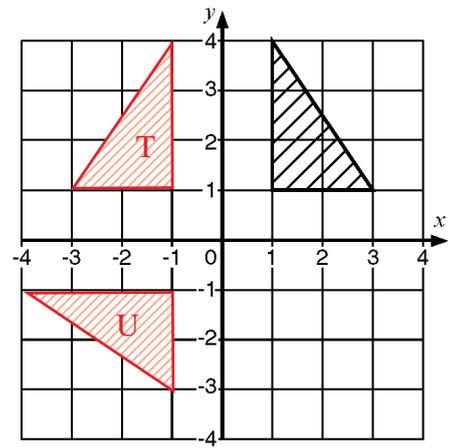
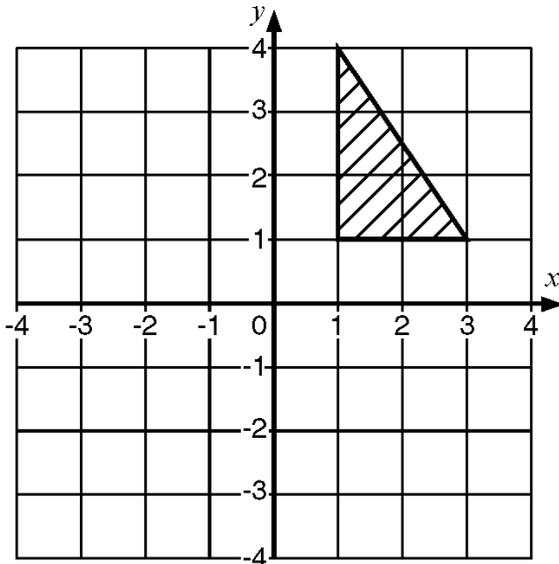
**18S)** Some plant heights are measured as shown in the table, below.

Height in cm	Frequency		
$0 < h \leq 20$	1		
$20 < h \leq 40$	2		
$40 < h \leq 60$	4		
$60 < h \leq 80$	3		

- a) Find an estimate for the mean height of a plant.  
b) In which interval does the median height lie?

## Grade C Clip 133

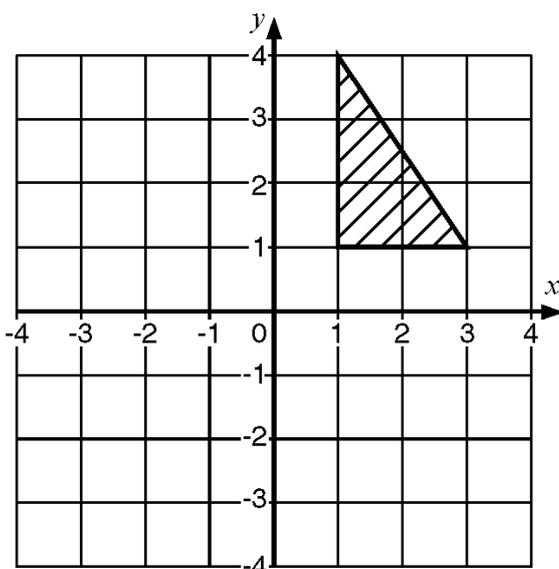
- 19T)** a) Reflect the shaded shape in the y axis and label it T  
 b) Rotate **T** 90° anticlockwise using (0, 0) as the centre of rotation and label the new shape U  
 c) Describe fully the single transformation that will move U back on to the shaded shape.



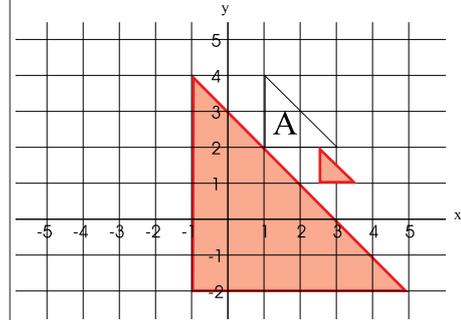
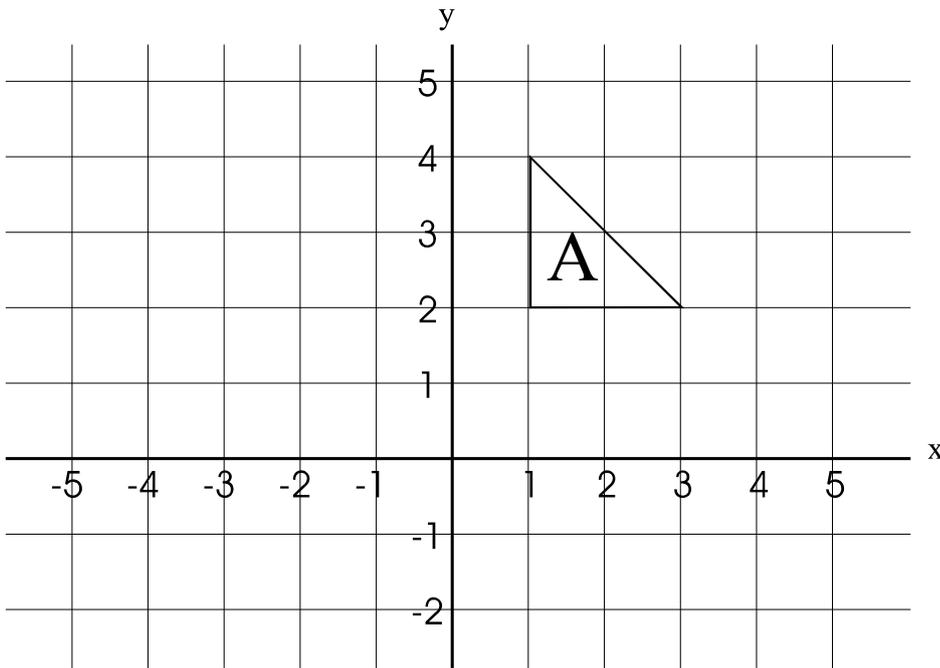
c) Reflection in  $y = -x$

## Grade D Clips 74, 75, 77

- 19S)** a) Reflect the shaded shape in the x axis and label it T  
 b) Rotate **T** 90° clockwise using (0, 0) as the centre of rotation and label the new shape U  
 c) Describe fully the single transformation that will move U back on to the shaded shape.

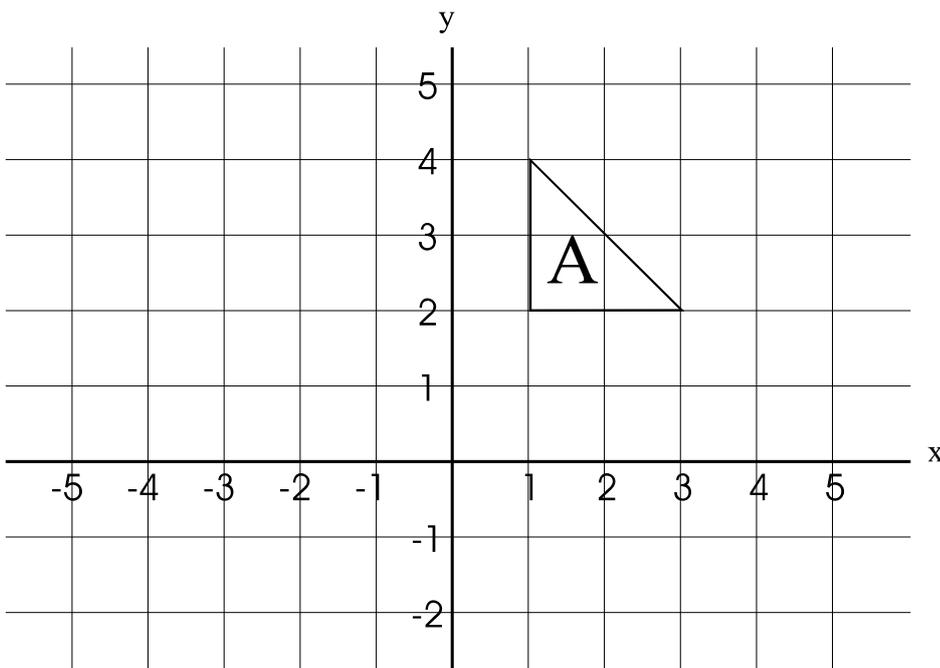


- 20T)** a) Enlarge triangle A scale factor 3 using (2, 4) as centre of enlargement  
 b) Enlarge triangle A scale factor  $\frac{1}{2}$  using (4, 0) as centre of enlargement

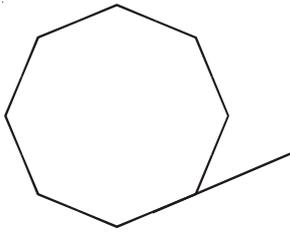


## Grade D Clip 76

- 20S)** a) Enlarge triangle A scale factor 2 using (4, 5) as centre of enlargement  
 b) Enlarge triangle A scale factor  $\frac{1}{2}$  using (-2, 2) as centre of enlargement



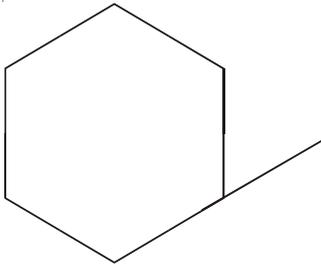
21T) Find the exterior angle of this regular octagon



Grade D  
Clip 70

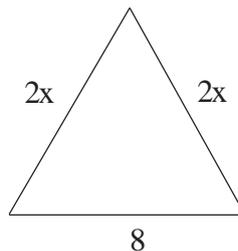
45 degrees

21S) Find the exterior angle of this regular hexagon



22T) a) In the triangle below, find an expression, in terms of  $x$ , for the **perimeter** of the triangle. Simplify your expression.

b) If the perimeter of the triangle is 44 cm, find the value of  $x$ .

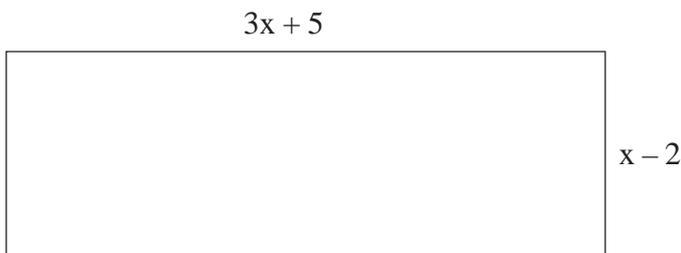


a)  $4x + 8$

b)  $x = 9$  cm

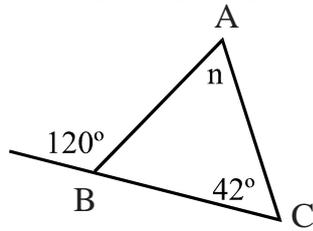
Grade C  
Clip 106

22S) a) In the rectangle below, find an expression, in terms of  $x$ , for the **perimeter** of the rectangle. Simplify your expression.



b) If the perimeter of the rectangle is 46 cm, find the value of  $x$ .

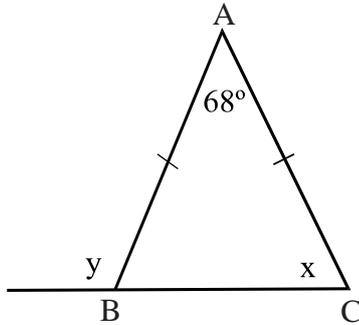
**23T)** Find the size of angle  $n$ , giving reasons



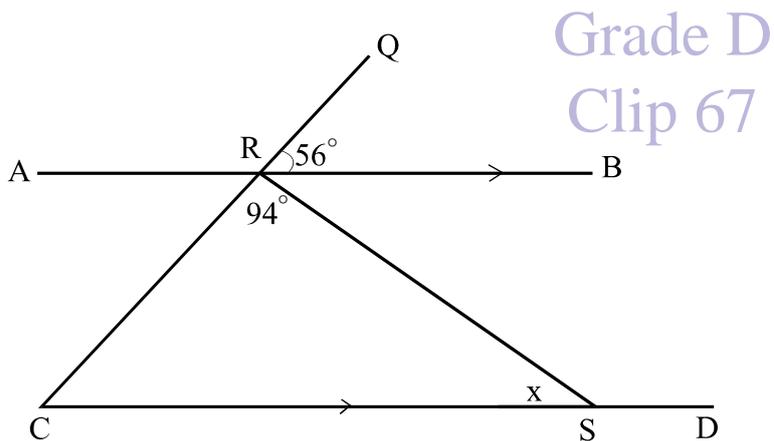
Grade D  
Clips 68, 69

$\hat{A}BC = 60^\circ$  (angles on st. line = 180)  
 $n = 78^\circ$  (angles in  $\triangle$  add up to 180)

**23S)** Find the size of angles  $x$  and  $y$ , giving reasons



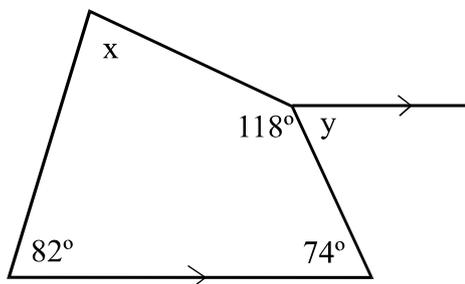
**24T)** Find the size of angle  $x$ , giving reasons



Grade D  
Clip 67

$\hat{B}RS = 30^\circ$  (angles on straight line add up to 180°)  
 $x = 30^\circ$  (alternate angles)

**24S)** Find the size of angles  $x$  and  $y$ , giving reasons



**25T)** Solve the following equations

- a)  $2x = 7$
- b)  $x - 8 = 4$
- c)  $2x + 3 = 11$
- d)  $\frac{x}{3} + 5 = 7$
- e)  $2(5x - 2) = 26$
- f)  $\frac{2x}{5} - 3 = -1$
- g)  $3x + 4 = 5x - 3$

## Grade C Clip 105

- a) 3.5
- b) 12
- c) 4
- d) 6
- e) 3
- f) 5
- g) 3.5

**25S)** Solve the following equations

- a)  $3x = 12$
- b)  $x - 9 = 3$
- c)  $3x + 2 = 14$
- d)  $\frac{x}{3} + 6 = 4$
- e)  $2(3x + 2) = 46$
- f)  $\frac{2x}{5} - 6 = -3$
- g)  $4x + 3 = 2x - 3$

**26T)** Draw a stem and leaf diagram to show the following information.

The heights of 12 plants in cm are:

3.6, 5.2, 4.1, 3.4, 5.8, 6.2, 4.7, 5.2,  
4.7, 6.4, 5.1, 4.9

## Grade D Clip 89

3	4 6
4	1 7 7 9
5	1 2 2 8
6	2 4

Key 4 | 1 means 4.1

**26S)** Draw a stem and leaf diagram to show the following information.

The weights of 10 people in kg are:

59, 52, 81, 67, 75, 62, 50, 64, 68, 71

**27T)** For each of the following, state whether it is a length, area, volume or none of them (a, b, m, q, r, x are lengths)

$\pi a^2 b$     $2ab$     $\frac{mq}{r}$     $ab(m + q)$     $\frac{p^2 r}{q}$     $\frac{\pi r^3}{x}$

## Grade C Clip 124

**27S)** For each of the following, state whether it is a length, area, volume or none of them (a, b, m, q, r, x are lengths)

$\pi ab$     $2ab^2$     $\pi r^2 + \pi r x$     $ab(m + q)$     $\frac{\pi p q r}{2}$     $\frac{r^2}{\pi x}$

V A L V A A

**28T)** a) Anne buys 46 litres of diesel at £1.32 per litre.  
How much does she spend altogether on diesel?

b) James spends £65.72 on 53 litres of petrol.  
How much was each litre of petrol?

Grade D Clip 60

**28S)** a) Sara buys 34 litres of diesel at £1.43 per litre.  
How much does she spend altogether on diesel?

b) Sid spends £57.12 on 42 litres of petrol.  
How much was each litre of petrol?

**29T)** a)  $\frac{2}{3} + \frac{3}{8}$

b)  $\frac{3}{5} - \frac{1}{4}$

c)  $\frac{3}{4} \times \frac{8}{9}$

d)  $\frac{2}{3} \div \frac{1}{6}$

Grade D  
Clips 56  
and 57

**29S)** a)  $\frac{3}{4} + \frac{2}{3}$

b)  $\frac{5}{7} - \frac{2}{5}$

c)  $\frac{3}{10} \times \frac{6}{8}$

d)  $\frac{4}{5} \div \frac{3}{10}$

**30T)** Draw a pie chart to show the following information

Crisp flavour	Frequency
Cheese	8
Plain	19
Beef	6
Prawn	3

Grade D  
Clip 86

**30S)** Draw a pie chart to show the following information

Crisp flavour	Frequency
Cheese	8
Plain	6
Beef	1
Prawn	3

a) £60.72

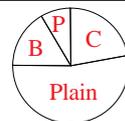
b) £1.24

a)  $1\frac{1}{24}$

b)  $\frac{7}{20}$

c)  $\frac{2}{3}$

d) 4



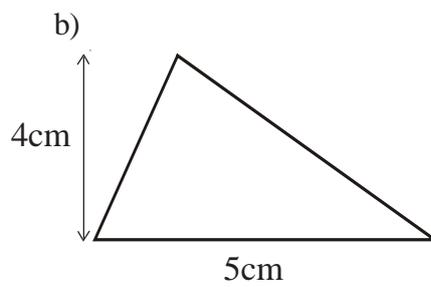
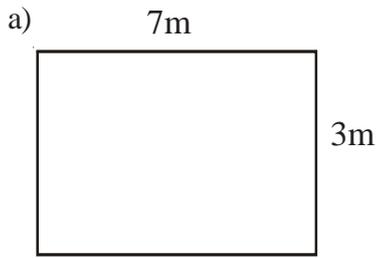
Cheese 80°

Plain 190°

Beef 60°

Prawn 30°

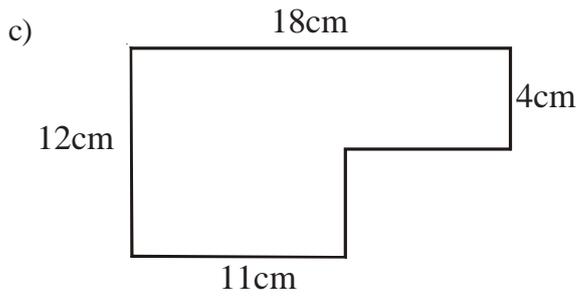
**31T)** Find the areas of the following shapes



a)  $21\text{m}^2$

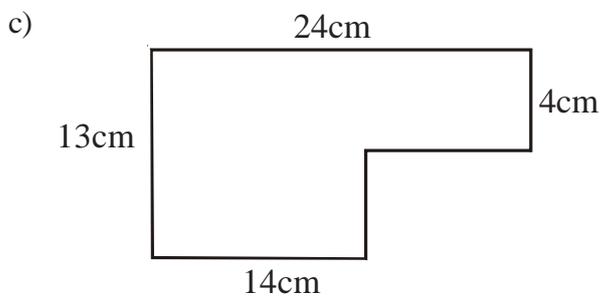
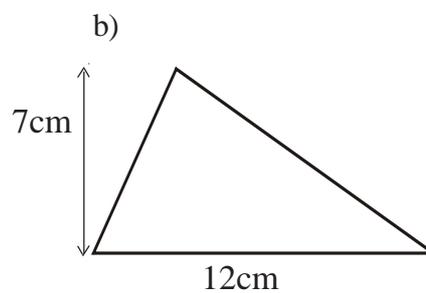
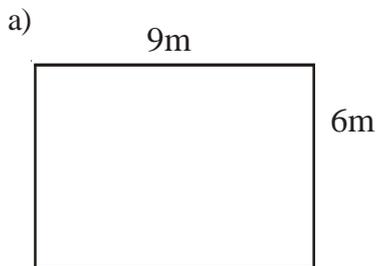
b)  $10\text{cm}^2$

c)  $160\text{cm}^2$

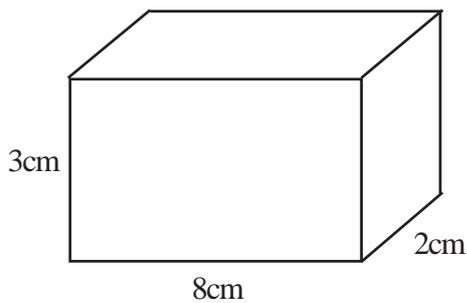


## Grade D Clip 73

**31S)** Find the areas of the following shapes



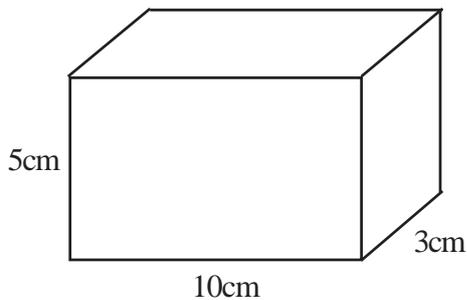
**32T)** Find the surface area of this cuboid.



Grade C  
Clip 121

92cm<sup>2</sup>

**32S)** Find the surface area of this cuboid.



**33T)** Make the letter in the bracket the subject of the formula.

a)  $v = u + at$  (a)

b)  $\frac{x}{a} - t = bc$  (x)

Grade C  
Clip 107

a)  $a = \frac{v - u}{t}$

b)  $x = a(bc + t)$

**33S)** Make the letter in the bracket the subject of the formula.

a)  $v^2 = u^2 + 2as$  (a)

b)  $\frac{x}{a} + y = c$  (x)

**34T)** Find the following:

- a) 10% of £700
- b) 15% of £80
- c) 35% of £600
- d) 17.5% of £48

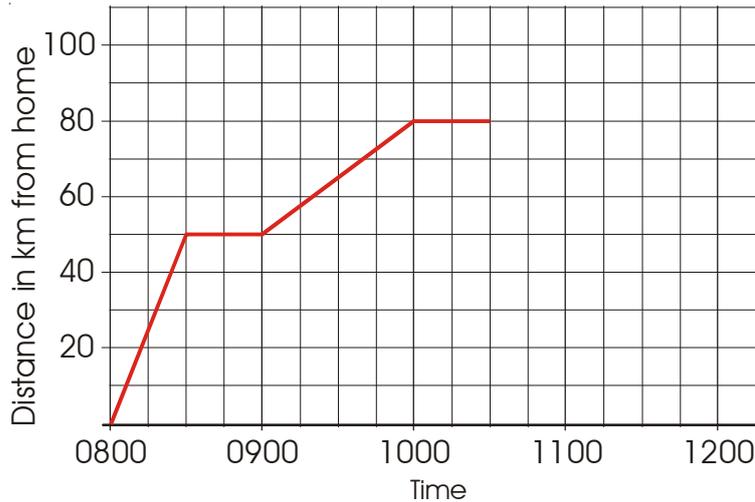
Grade D  
Clip 52

- a) £70
- b) £12
- c) £210
- d) £8.40

**34S)** Find the following:

- a) 40% of £260
- b) 15% of £900
- c) 85% of £800
- d) 17.5% of £240

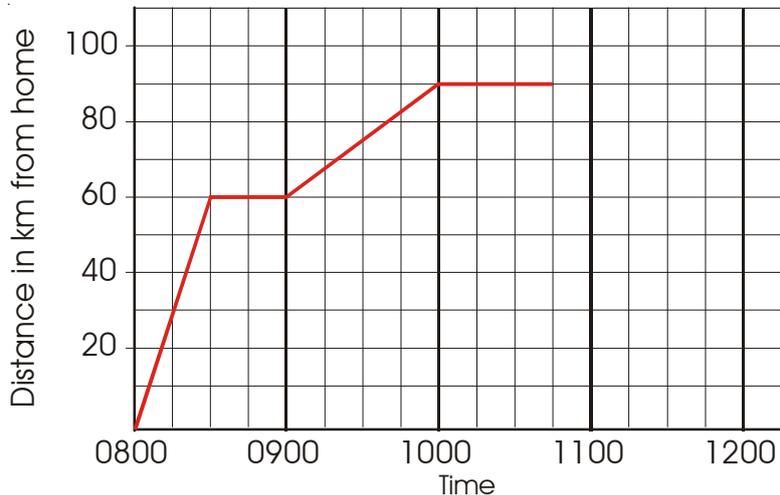
**35T)** Sally's mother lives 80km from Sally. This is the journey to her mother's house.



- Sally has a rest at 8.30. What speed had she been travelling at until 8.30?
- How long did she rest for?
- What speed did she travel at for the last part of the journey to her mother's house?
- For the return journey, Sally travelled at 60km/h without a break. Complete the travel graph to show this.

## Grade C Clip 117

**35S)** Sally's mother lives 90km from Sally. This is the journey to her mother's house.



- What speed did Sally travel at until her first rest?
- What speed did she travel at for the last part of the journey to her mother's house?
- For the return journey, Sally travelled at 80km/h without a break. Complete the travel graph to show this.

- 100km/h
- 30 mins
- 30km/h

- 36T)** a) Complete the table for the equation  $y = 2x^2 - 3x$

x	-2	-1	0	1	2	3
y	14					

Grade C  
Clip 116

-2	-1	0	1	2	3
14	5	0	-1	2	9

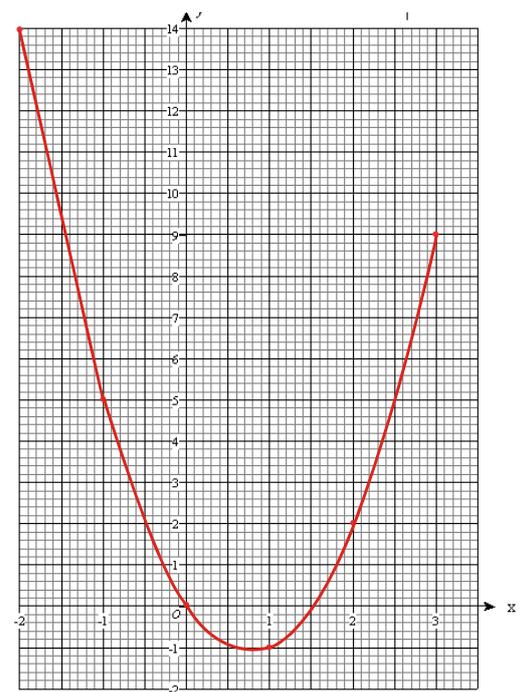
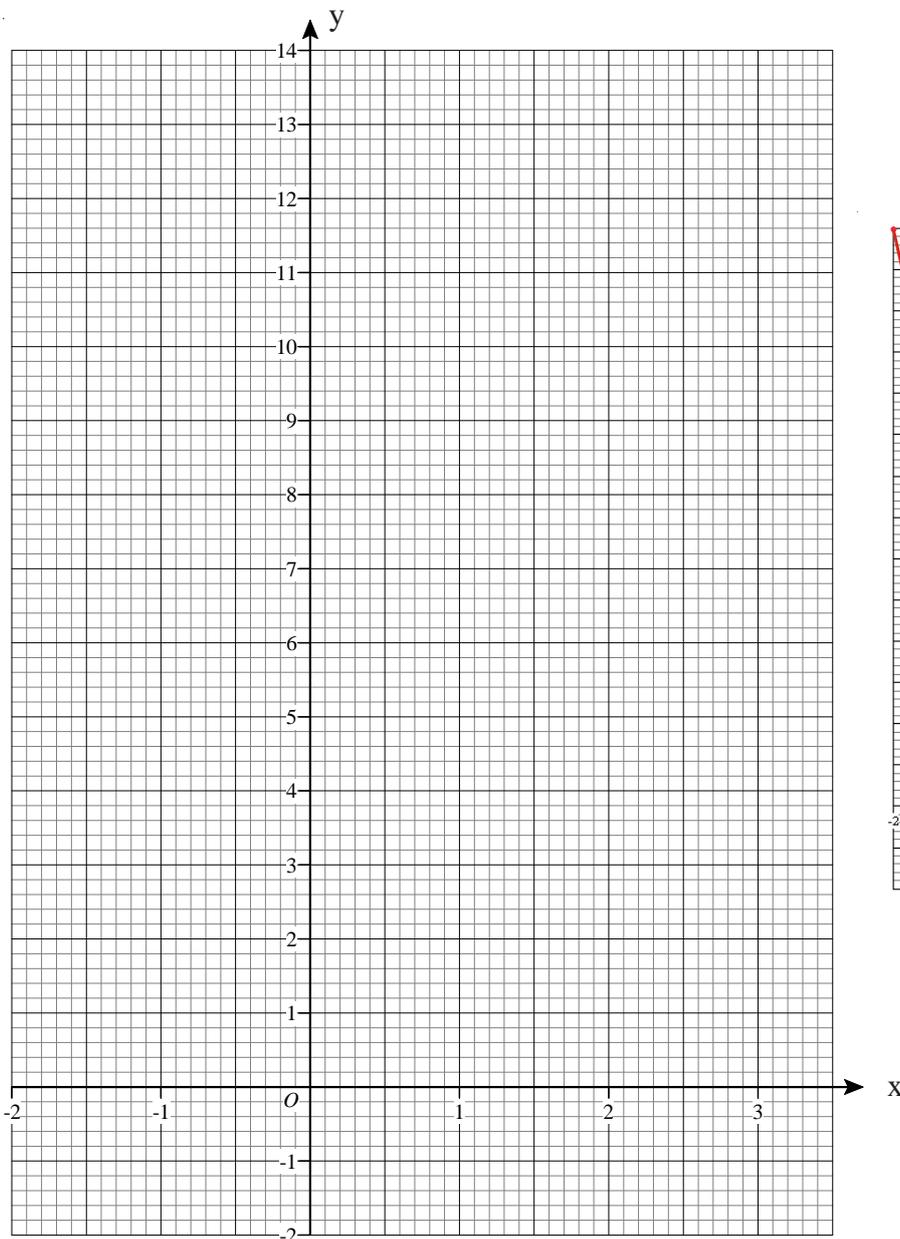
- b) Draw the graph of  $y = 2x^2 - 3x$  on the axes at the bottom of the page
- c) Use your graph to find the value of  $y$  when  $x = 2.3$
- d) Use your graph to find the value of  $y$  when  $x = -1.5$
- e) Use your graph to solve  $2x^2 - 3x = 5$
- f) Use your graph to solve  $2x^2 - 3x = 8$

c) 3.6

d) 9

e)  $x = -1$  and  $x = 2.5$

f)  $x = -1.3$  and  $x = 2.9$

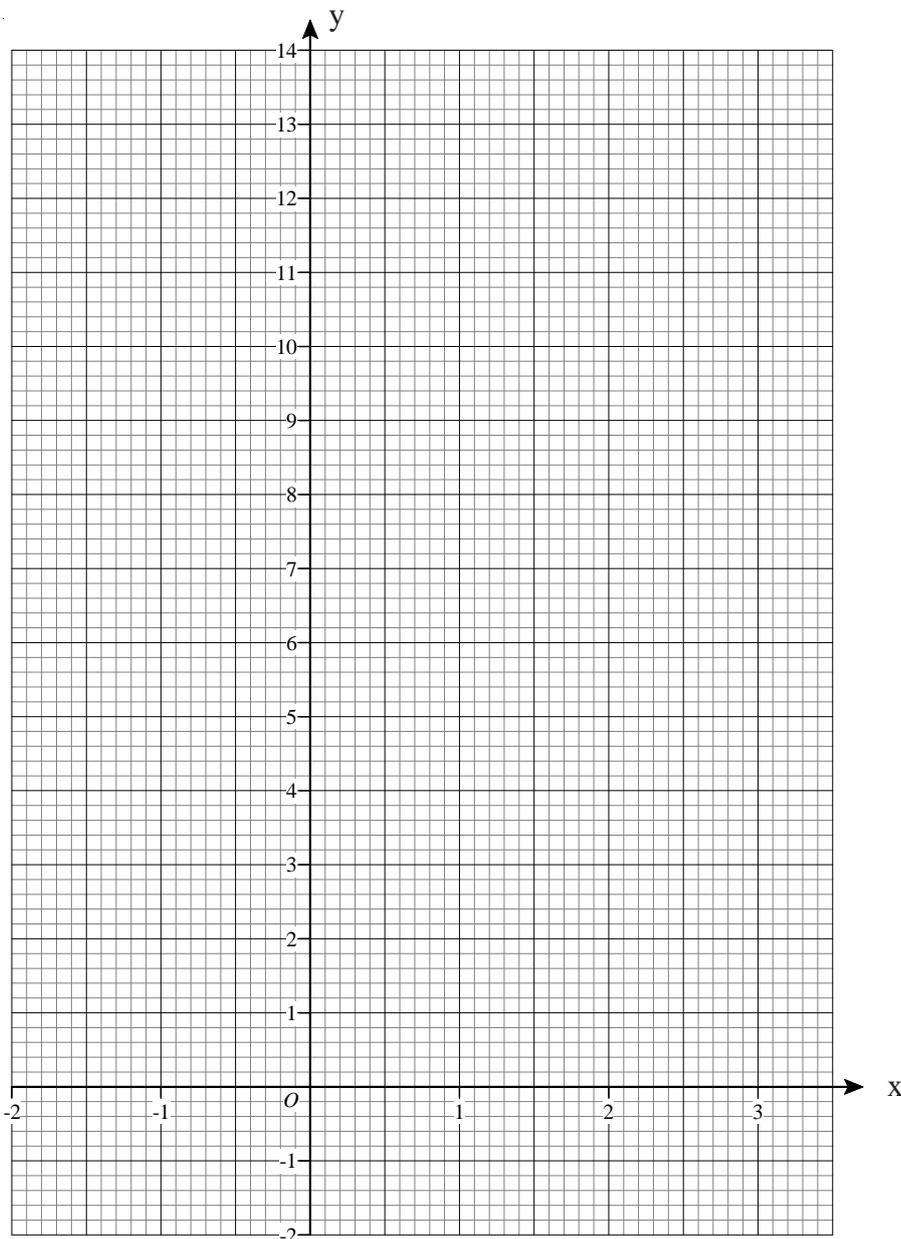


- 36S) a) Complete the table for the equation  
 $y = 3x^2 - x$

x	-2	-1	0	1	2
y	14				

Grade C  
 Clip 116

- b) Draw the graph of  $y = 3x^2 - x$  on the axes at the bottom of the page
- c) Use your graph to find the value of  $y$  when  $x = 1.5$
- d) Use your graph to find the value of  $y$  when  $x = -1.5$
- e) Use your graph to solve  $3x^2 - x = 10$



**37T)** Draw a set of axes going from  $-5$  to  $+5$

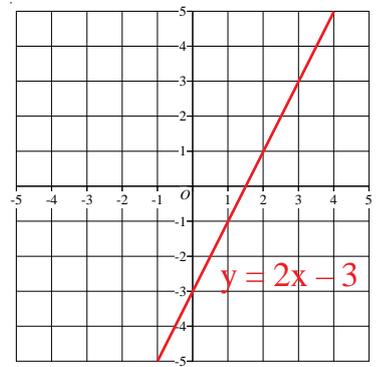
- a) Draw the graph of  $y = 2x - 3$
- b) What is the gradient?

**37S)** Draw a set of axes going from  $-5$  to  $+5$

- a) Draw the graph of  $y = 3x + 1$
- b) What is the gradient?

Grade C  
Clip 113

b) 2



**38T)** The table below shows the probability of an oddly shaped 4-sided dice landing on 1, 2, 3, or 4.

- a) Work out the value of  $x$
- b) If the dice is rolled 1000 times how many 2s would you expect to get?

1	2	3	4
0.15	0.37	0.24	$x$

Grade C  
Clip 132

a) 0.24

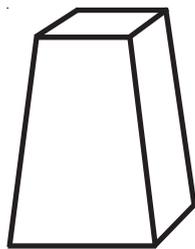
b) 370

**38S)** The table below shows the probability of an oddly shaped 4-sided dice landing on 1, 2, 3, or 4.

- a) Work out the value of  $x$
- b) If the dice is rolled 1000 times how many 3s would you expect to get?

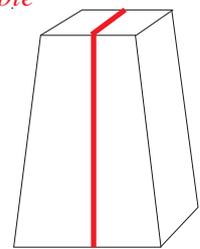
1	2	3	4
0.29	0.34	0.14	$x$

**39T)** Draw a plane of symmetry on this shape

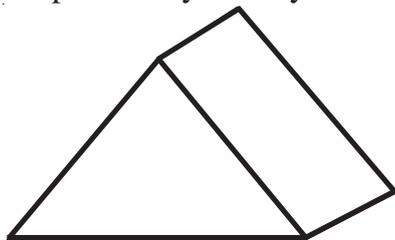


Grade D  
Clip 83

*other answers are possible*



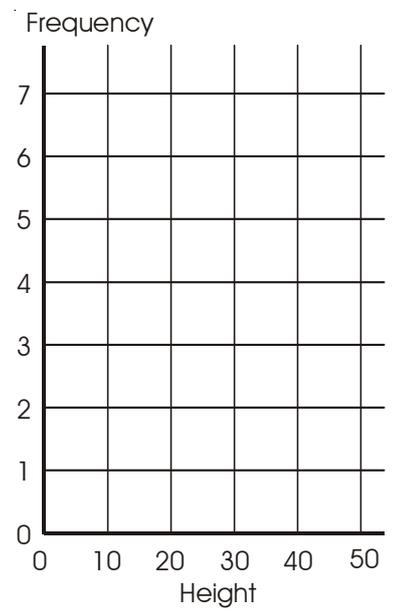
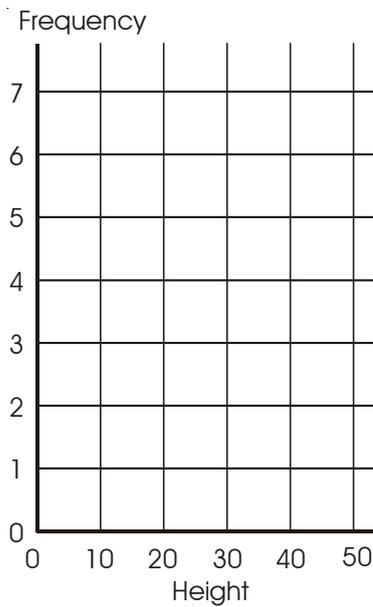
**39S)** Draw a plane of symmetry on this shape



**40T)**

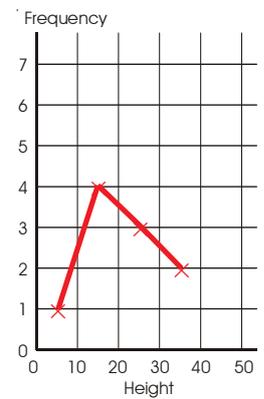
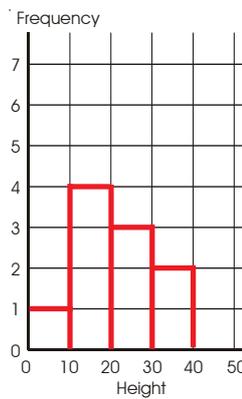
Height	Frequency
0 to 10	1
10 to 20	4
20 to 30	3
30 to 40	2

- a) On the first set of axes, draw a frequency diagram
- b) On the second set of axes, draw a frequency polygon



## Grade D Clip 88

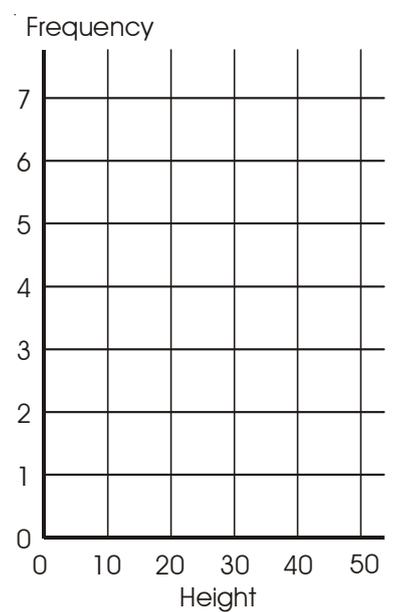
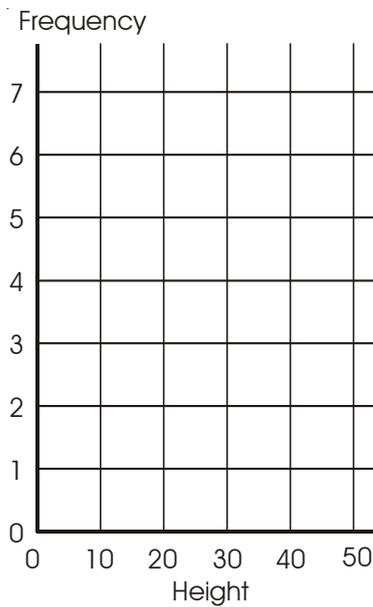
ANSWERS for 40T



**40S)**

Height	Frequency
0 to 10	3
10 to 20	7
20 to 30	2
30 to 40	1

- a) On the first set of axes, draw a frequency diagram
- b) On the second set of axes, draw a frequency polygon



**41T)** a) In a room there are 7 boys and 3 girls.  
What percentage of the people are boys?

a) 70%

b) In a room there are 13 boys and 7 girls.  
What percentage of the people are girls?

b) 35%

c) Sally scores 24 marks out of 40 in a Science test.  
What was her percentage score?

c) 60%

### Grade D Clip 54

**41S)** a) In a room there are 11 boys and 9 girls.  
What percentage of the people are boys?

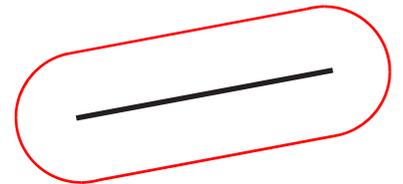
b) In a room there are 13 boys and 12 girls.  
What percentage of the people are girls?

c) Emma scores 54 marks out of 60 in a Science test.  
What was her percentage score?

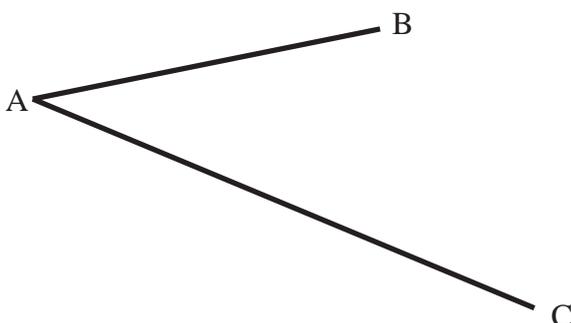
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**42T)** A point, P, moves so that the locus of P is always 2 cm from the line AB.  
Draw the locus of P.

### Grade C Clip 130



**42S)** A point, P, moves so that the locus of P is always equidistant from lines AB and AC.  
Draw the locus of P.



- 43T)** a) Sketch a scatter diagram with positive correlation

'hair length', 'hair colour', 'intelligence,'  
'circumference of wrist', 'height', 'ice cream sales', 'weight', 'outside temperature'  
'sale of extra-warm jackets', 'eye colour'

- b) From the list above select two sets of data which would have  
(i) a positive correlation  
(ii) no correlation

### Grade D Clip 87

- 43S)** a) Sketch a scatter diagram with negative correlation

'hair length', 'hair colour', 'intelligence,'  
'circumference of wrist', 'height', 'ice cream sales', 'weight', 'outside temperature'  
'sale of extra-warm jackets', 'eye colour'

- b) From the list above select two sets of data which would have  
(i) a negative correlation  
(ii) no correlation

- 
- 44T)** a) What are the first four multiples of 7?  
b) Write down all the factors of 30.  
c) What are the first six prime numbers?

- 44S)** a) What are the first four multiples of 5?  
b) Write down all the factors of 40.  
c) Which two prime numbers come next, after 13?

### Grade D Clip 44

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**45T)** Solve the inequality  $2x + 3 < 11$

**45S)** Solve the inequality  $5x - 7 > 43$

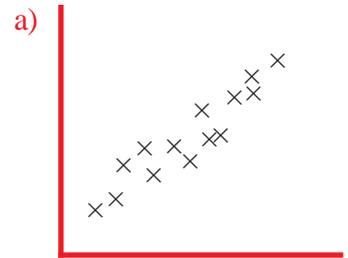
### Grade C Clip 109

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**46T)** Evaluate  $5^3$

**46S)** Evaluate  $2^4$

### Grade D Clip 45



- b) (i) height and weight  
or Ice cream sales and temp.  
(ii) hair length and hair colour  
or hair colour and intelligence  
etc

- 
- a) 7 14 21 28  
b) 1 2 3 5 6 10 15 30  
c) 2 3 5 7 11 13

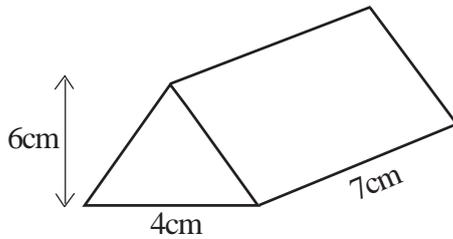
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$x < 4$

---

125

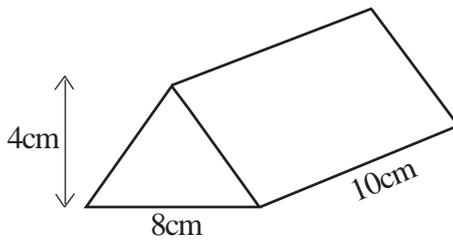
**47T)** Find the volume of this triangular prism.



Grade C  
Clip 122

Volume =  $84\text{cm}^3$

**47S)** Find the volume of this triangular prism.



**48T)** a) Write as a power of 7

$7^3 \times 7^5$

b) Write as a power of 2

$2^8 \div 2^2$

**48S)** a) Write as a power of 5

$5^2 \times 5^4 \times 5$

b) Write as a power of 3

$3^9 \div 3^4$

Grade C  
Clip 111

a)  $7^8$

b)  $2^6$

**49T)** Complete the two-way table which shows the favourite soup of 100 people.

	Oxtail	Tomato	Chicken	Total
Male	25			42
Female		18	11	
Total			16	100

	Oxtail	Tomato	Chicken	Total
Male	25	12	5	42
Female	29	18	11	58
Total	54	30	16	100

Grade D Clip 85

**49S)** 110 students studied History and Geography as shown in the two-way table.

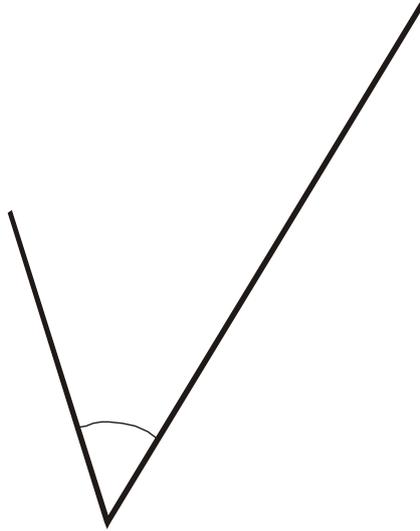
	History	Geography	Both	Total
Female				
Male		8		
Total	15	20		110

40 males studied both subjects.

52 of the students were male.

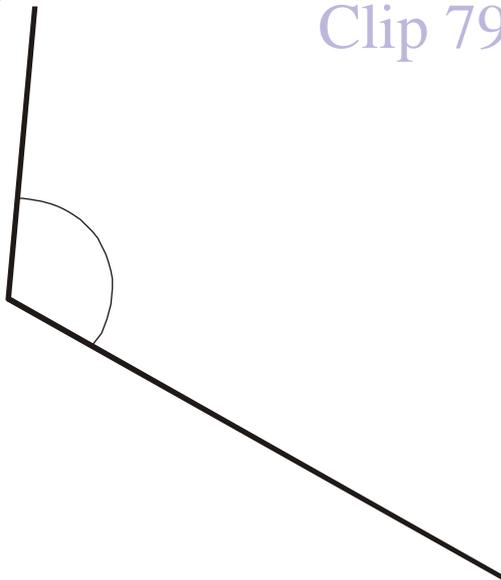
Complete the two-way table.

**50T)** Measure this angle.



48°

**50S)** Measure this angle.



Grade D  
Clip 79

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**51T)** The price of a pair of shoes is £75.  
How much are they after a price increase of 10%?

£82.50

**51S)** A new car costs £8000.  
If the price is reduced by 15% what is the new price?

Grade C Clip 93

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**52T)**  $73.5 \div 0.21$

350

**52S)**  $18.02 \div 0.34$

Grade C Clip 100

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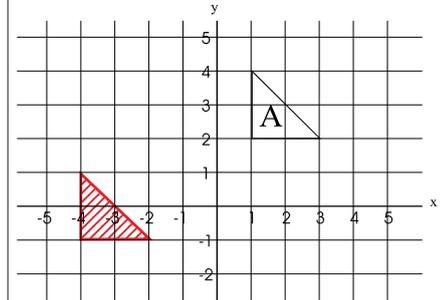
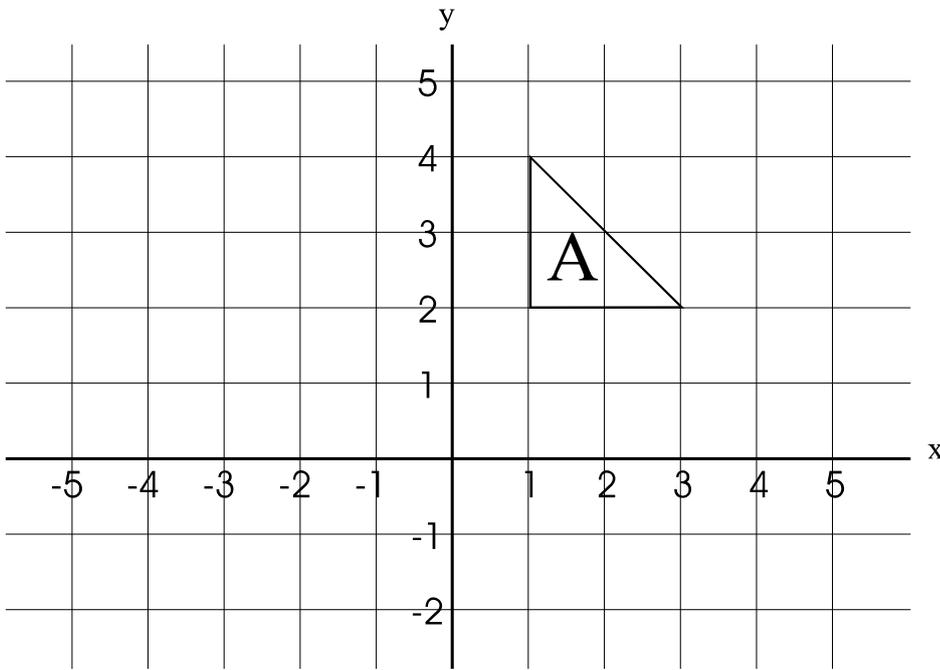
**53T)** What are the first 5 terms of the number sequence  
with the  $n$ th term of  $3n + 2$ ?

5 8 11 14 17

Grade D Clip 65

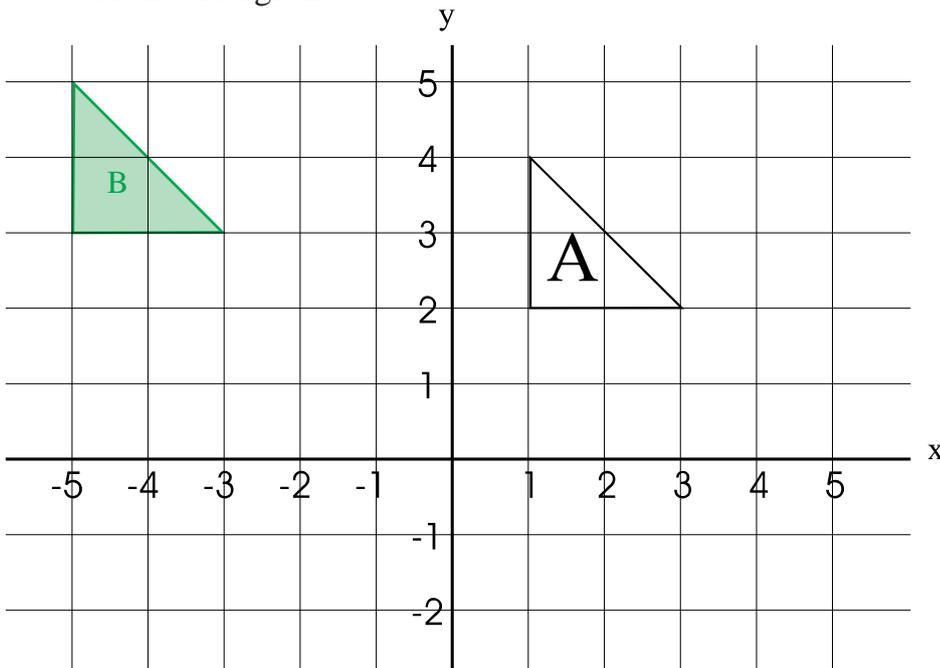
**53S)** What are the first 5 terms of the number sequence  
with the  $n$ th term of  $4n - 3$ ?

**54T)** Translate triangle A by vector  $\begin{bmatrix} -5 \\ -3 \end{bmatrix}$



Grade D Clip 77

**54S)** Describe fully the transformation which maps triangle A onto triangle B.



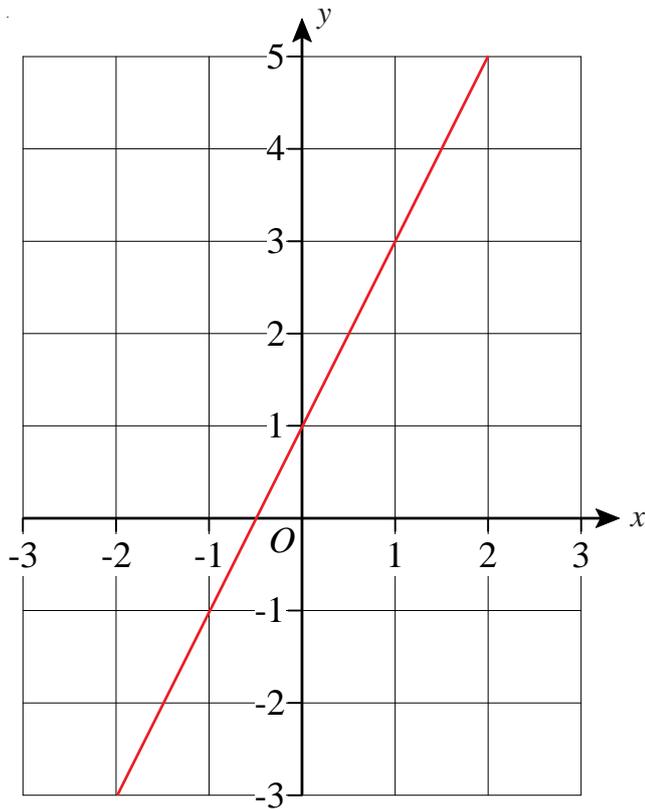
**55T)** Change the recurring decimal  $0.\dot{2}\dot{7}$  into a fraction in its simplest form.

**55S)** Change the recurring decimal  $0.\dot{6}\dot{3}$  into a fraction in its simplest form.

Grade C Clip 98

$$\frac{3}{11}$$

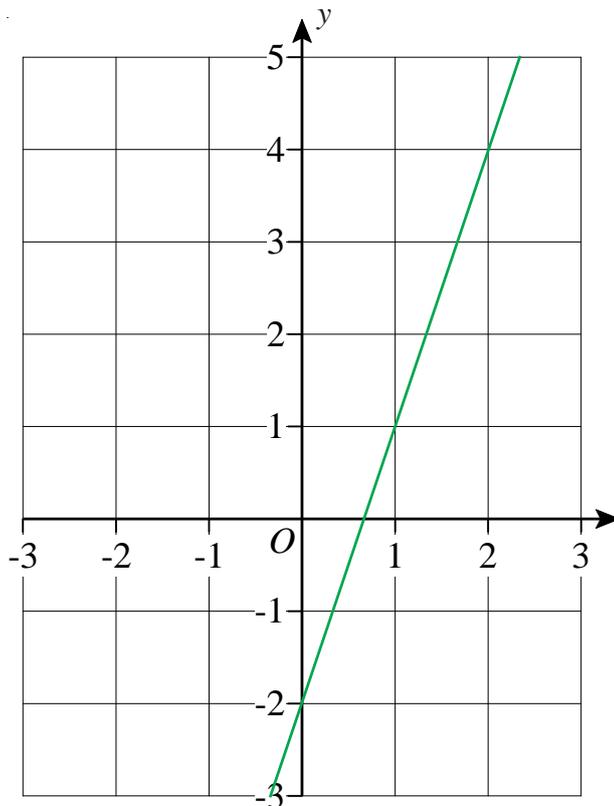
**56T)** What is the equation of the line?



$$y = 2x + 1$$

Grade D Clip 114

**56S)** What is the equation of the line?



**57T)** List all of the outcomes if you roll a dice and flip a coin.

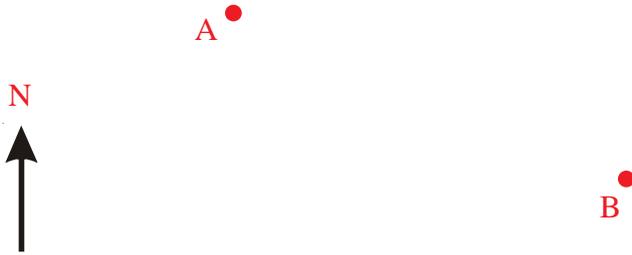
**57S)** List all of the outcomes if you flip three coins.

Grade D Clip 90

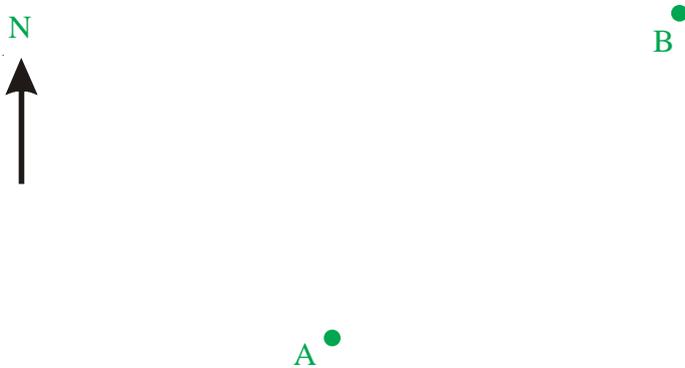
1H 2H 3H 4H 5H 6H  
1T 2T 3T 4T 5T 6T

**58T)** Use a protractor to work out the bearing of A from B.

Grade C Clip 131



**58S)** Use a protractor to work out the bearing of B from A.



**59T)** In the list of fractions, below, which two are equivalent to  $\frac{4}{5}$  ?

- $\frac{5}{6}$     $\frac{8}{9}$     $\frac{8}{10}$     $\frac{10}{11}$     $\frac{16}{20}$     $\frac{18}{24}$

**59S)** In the list of fractions, below, which two are equivalent to  $\frac{2}{3}$  ?

- $\frac{8}{12}$     $\frac{7}{8}$     $\frac{6}{12}$     $\frac{8}{14}$     $\frac{10}{16}$     $\frac{14}{21}$

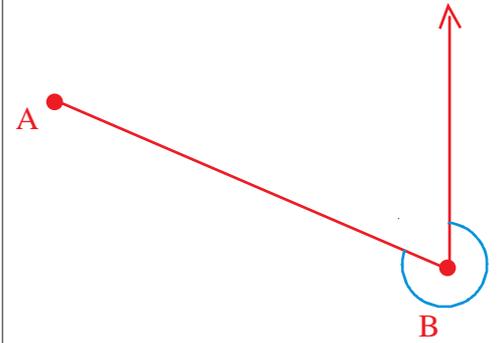
Grade C Clip 47

**60T)** A map has a scale of 1:100000.  
If town A is 5cm away from town B on the map, what is the actual distance between them in kilometres?

**60S)** A map has a scale of 1:500000.  
If town A is 3cm away from town B on the map, what is the actual distance between them in kilometres?

Grade C Clip 61

Bearing of A from B is 293°



- $\frac{8}{10}$     $\frac{16}{20}$

5km

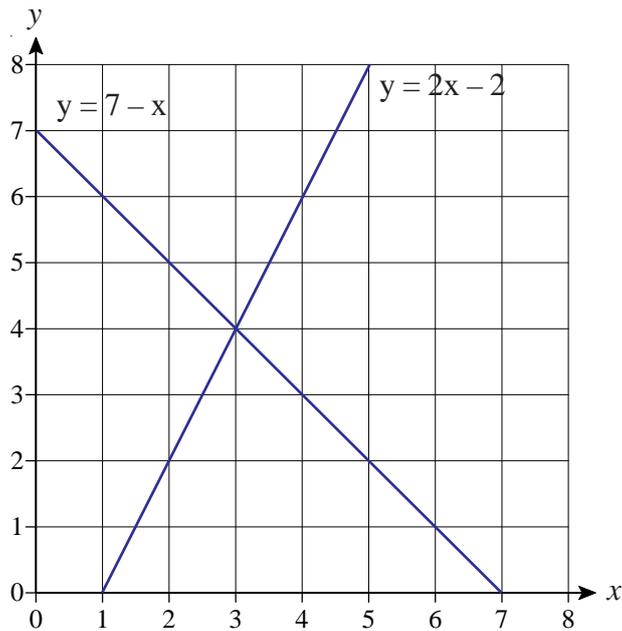
- 61T)** a)  $-3 \times -4$   
 b)  $7 \times -5$   
 c)  $-12 \div 4$   
 d)  $-8 - 6$   
 e)  $9 - -5$   
 f)  $10 + -6$   
 g)  $-4 + -5$

- 61S)** a)  $6 \times -3$   
 b)  $-10 \times -2$   
 c)  $15 \div -3$   
 d)  $12 - 18$   
 e)  $2 - -13$   
 f)  $15 + -17$   
 g)  $-6 + -8$

- a) 12  
 b) -35  
 c) -3  
 d) -14  
 e) 14  
 f) 4  
 g) -9

Grade C Clip 99

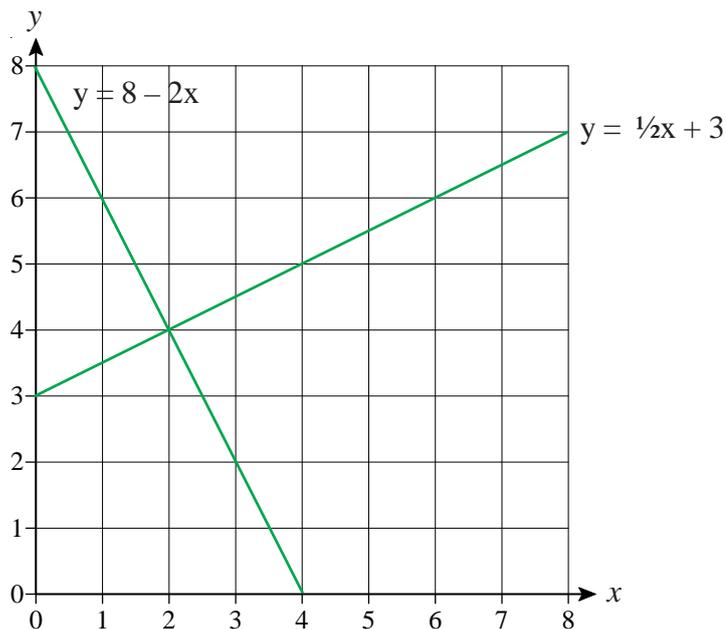
- 62T)** Use the graph to solve the simultaneous equations  
 $y = 7 - x$  and  $y = 2x - 2$



$x = 3$  and  $y = 4$

Grade C Clip 115

- 62S)** Use the graph to solve the simultaneous equations  
 $y = 8 - 2x$  and  $y = \frac{1}{2}x + 3$

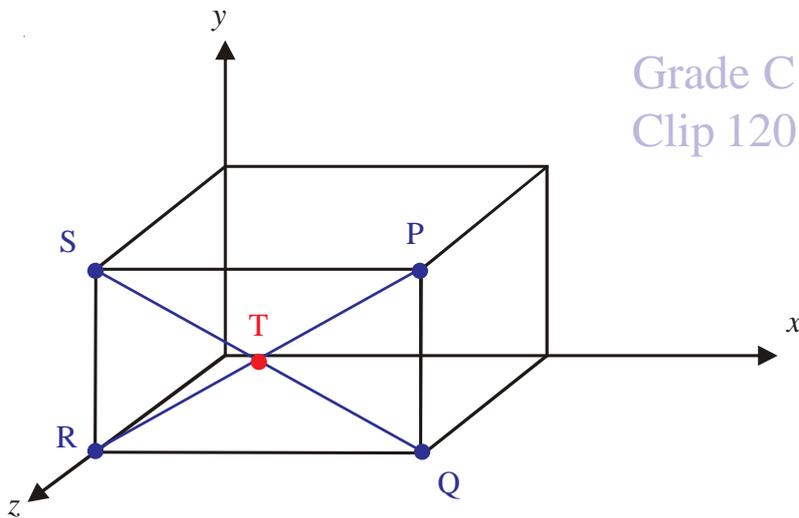


**63T)** Estimate the answer to  $\frac{37.9 \times 417}{1.94 \times 8.03}$

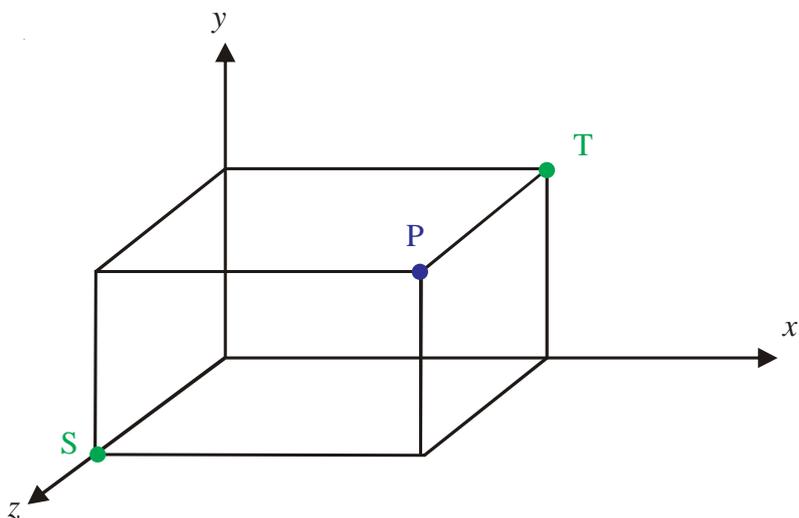
**63S)** Estimate the answer to  $\frac{873 \times 18}{104}$

Grade C Clip 101

- 64T)** Point P has coordinates (7, 4, 3)  
 Point T is the intersection of PR and SQ.  
 Work out the coordinates of T.



- 64S)** Point P has coordinates (8, 3, 4)  
 a) Work out the coordinates of T.  
 b) Work out the coordinates of S.



- 65T)** If the probability of passing a driving test is 0.42 what is the probability of failing the test?

- 65S)** The probability of a school football team winning a football match is 0.34 and the probability of losing is 0.21.  
 What is the probability of the team drawing the match?

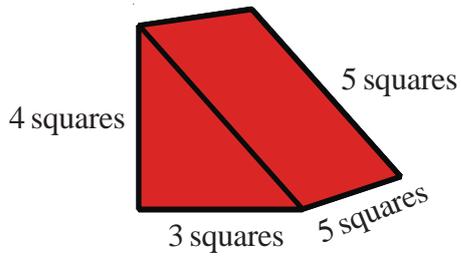
Grade D Clip 91

1000  $\frac{37.9 \times 417}{1.94 \times 8.03}$

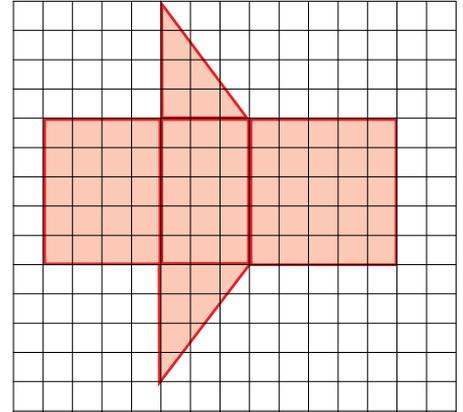
(3.5, 2, 3)

0.58

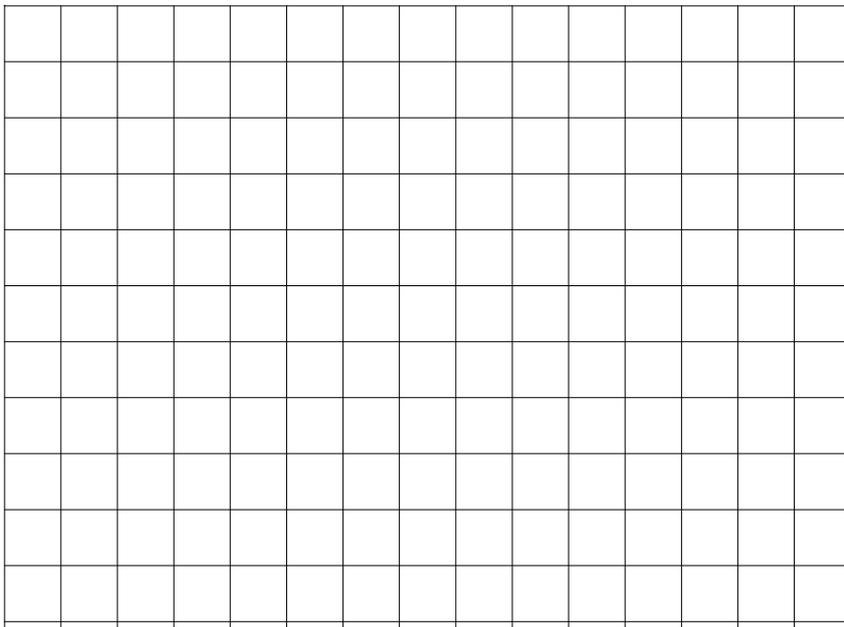
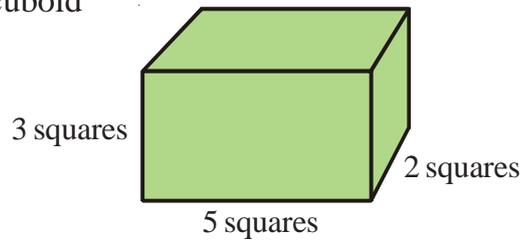
66T) Draw the net of this right-angled triangular prism.



Grade D  
Clip 82



66S) Draw the net of this cuboid



**67T)** Write the following fractions in their simplest forms.

- a)  $\frac{16}{20}$
- b)  $\frac{9}{15}$
- c)  $\frac{24}{60}$

Grade D  
Clip 48

- a)  $\frac{4}{5}$
- b)  $\frac{3}{5}$
- c)  $\frac{2}{5}$

**67S)** Write the following fractions in their simplest forms.

- a)  $\frac{12}{30}$
- b)  $\frac{7}{21}$
- c)  $\frac{40}{64}$

---

**68T)** Here are the ingredients needed to make salmon fishcakes for **four** people.

- 450g potatoes**
- 900g of salmon**
- 25g butter**
- 15g dill**
- 50g flour**
- 2 eggs**
- 150g breadcrumbs**

Grade D  
Clip 62

- a) What weight of salmon would be needed to use the recipe for six people?
- b) For seven people, what weight of flour is needed?

- a) 1350g
- b) 87.5g

**68S)** Here are the ingredients needed to make shepherd's pie for **five** people.

- 500g potatoes**
- 50g of cheese**
- 150g butter**
- 1 onion**
- 2 carrots**
- 300ml stock**
- 1kg of lamb**

- a) What weight of cheese would be needed to use the recipe for eight people?
- b) For six people, how much stock is needed?
- c) For nine people, what weight of lamb should be used?

**69T)** Put these fractions in order of size, smallest to largest.

$$\frac{5}{8} \quad \frac{7}{12} \quad \frac{2}{3} \quad \frac{3}{4}$$

**69S)** Put these fractions in order of size, smallest to largest.

$$\frac{4}{5} \quad \frac{9}{20} \quad \frac{7}{10} \quad \frac{1}{2}$$

### Grade D Clip 49

---

- 70T)** a) What is the square of 6?  
b) Find the cube of 4.  
c) What is the square root of 49?  
d) What is the cube root of 27?  
e) Evaluate  $\sqrt{144}$

### Grade D Clip 46

- 70S)** a) What is the square of 8?  
b) Find the cube of 2.  
c) What is the square root of 100?  
d) What is the cube root of 125?  
e) Evaluate  $\sqrt{169}$
- 

**71T)** Sara wishes to find out how much pocket money people in her class received.

Design a suitable question she could use on a questionnaire.

You should include some tickboxes.

**71S)** Fred wants to know which sports are watched by pupils in his class.

Design a suitable data collection sheet he can use to find out.

### Grade D Clip 84

### Grade C Clip 134

---

**72T)** Change the following fractions to decimals.

a)  $\frac{4}{5}$       b)  $\frac{3}{8}$

**72S)** Change the following fractions to decimals.

a)  $\frac{6}{10}$       b)  $\frac{5}{8}$

### Grade D Clip 58

---

$$\frac{7}{12} \quad \frac{5}{8} \quad \frac{2}{3} \quad \frac{3}{4}$$

- a) 36  
b) 64  
c) 7  
d) 3  
e) 12
- 

How much pocket money do you receive each week?

Less than £2

Between £2.01 and £4

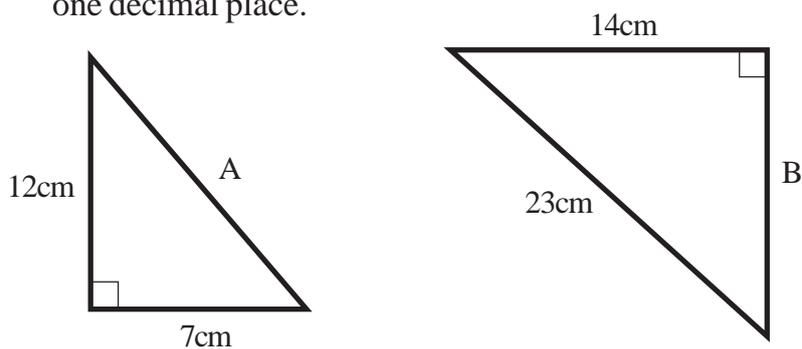
More than £4

---

- a) 0.8      b) 0.375
-

## Questions 73 to 85 are all calculator questions

**73T)** Find the length of sides A, B and C giving your answers to one decimal place.

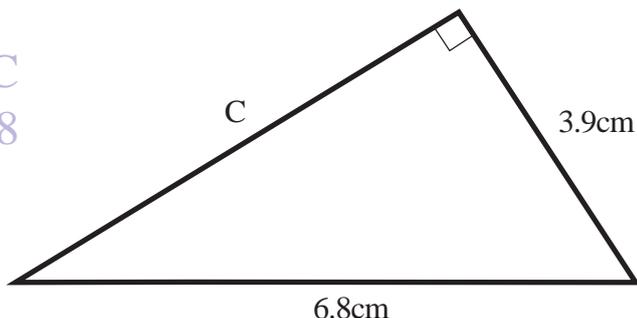


A 13.9cm

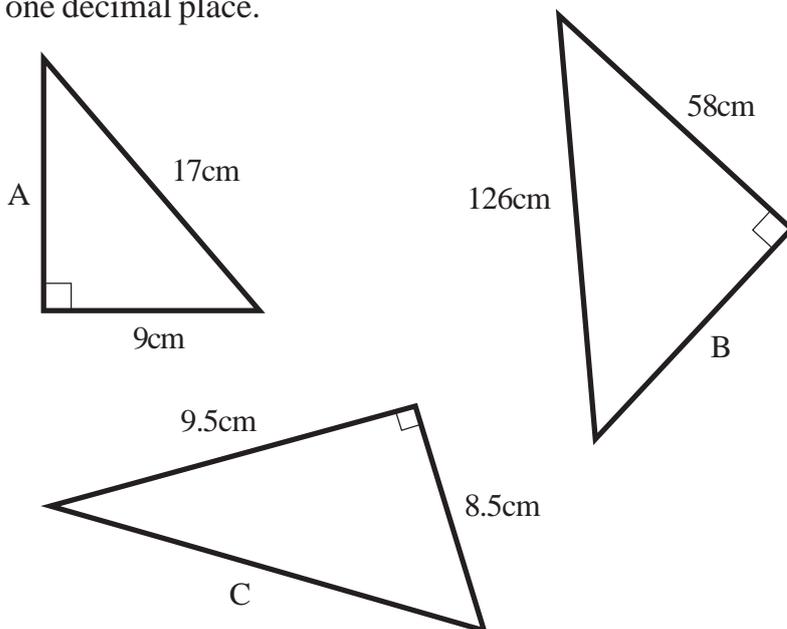
B 18.2cm

C 5.6cm

Grade C  
Clip 118



**73S)** Find the length of sides A, B and C giving your answers to one decimal place.



**74T)** The equation  $x^3 + 2x = 20$  has a solution between 2 and 3. Use a trial and improvement method to find this solution. Give your answer to 1 decimal place and show all workings.

$x=2$	$2^3 + 2 \times 2 = 12$	Too low
$x=3$	$3^3 + 2 \times 3 = 33$	Too big
$x=2.4$	$2.4^3 + 2 \times 2.4 = 18.624$	Too low
$x=2.5$	$2.5^3 + 2 \times 2.5 = 20.625$	Too big
$x=2.45$	$2.45^3 + 2 \times 2.45 = 19.60612$	Too low

**$x = 2.5$  to 1 decimal place.**

**74S)** The equation  $x^3 - 4x = 88$  has a solution between 4 and 5. Use a trial and improvement method to find this solution. Give your answer to 1 decimal place and show all workings.

Grade D Clip 110

- 75T)** a) 34% of £28.76 =  
 b) 76% of 900 =  
 c) Reduce £45.50 by 12.5%

Grade D  
Clip 46

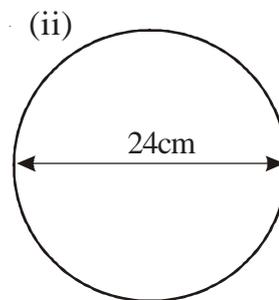
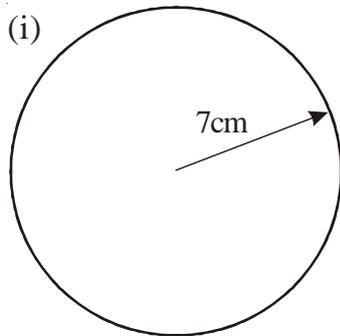
- 75S)** a) 29% of £235.60 =  
 b) 43% of 2400 =  
 c) Reduce £260 by 30%

- 76T)** If £1 = 1.23 Euros,  
 a) Change £38 to Euros.  
 b) Change 650 Euros to pounds (£).

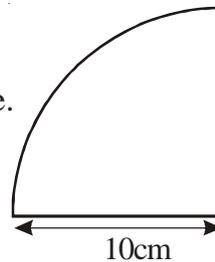
Grade D  
Clip 64

- 76S)** If £1 = 1.27 Euros,  
 a) Change £2000 to Euros.  
 b) Change 923 Euros to pounds (£).

- 77T)** a) Find the area of the following circles.  
 Give both answers to 1 decimal place.

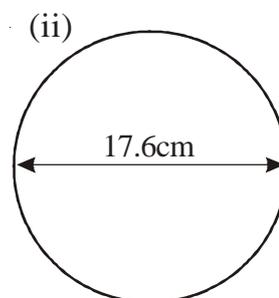
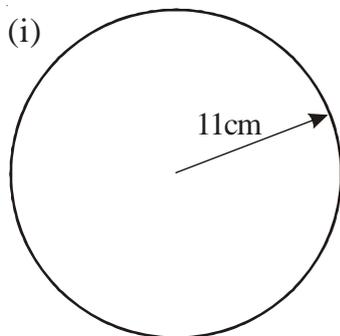


- b) Find the area of this quarter circle.

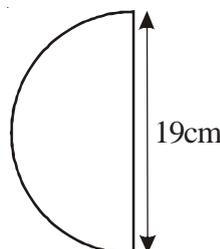


Grade D Clip 71

- 77S)** a) Find the area of the following circles.  
 Give both answers to 1 decimal place.



- b) Find the area of this semicircle.



- a) £9.78  
 b) 684  
 c) £39.81

- a) 46.74 Euros  
 b) £528.46

- a) (i) 153.9cm<sup>2</sup>  
 (ii) 452.4cm<sup>2</sup>

- b) 78.5cm<sup>2</sup>

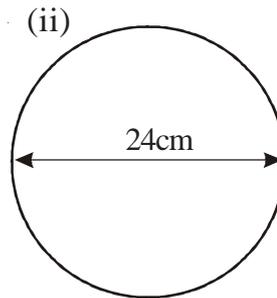
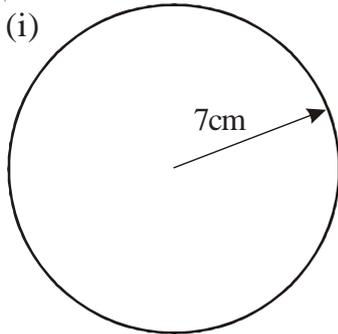
**78T)** Which is the best value for money  
 500g of sausages for £2.75 or  
 650g of the same type of sausages for £3.70?  
 You must show all your working.

**78S)** Which is the best value for money  
 800ml of orange juice for £0.85 or  
 350ml of orange juice for £0.46?  
 You must show all your working.

Grade D  
 Clip 50

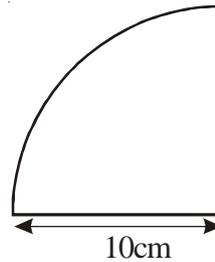
0.55p per gram  
 0.57p per gram  
**500g for £2.75 best value**

**79T)** a) Find the circumference of the following circles.  
 Give both answers to 1 decimal place.



a) (i) 44.0cm  
 (ii) 75.4cm

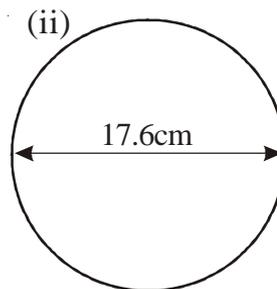
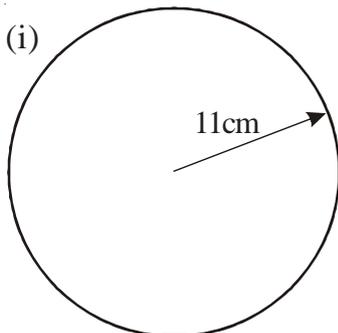
b) Find the **perimeter** of this  
 quarter circle to 1 decimal place.



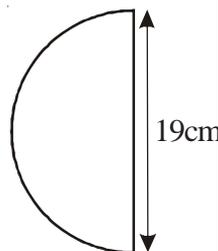
b) 35.7cm

Grade D Clip 72

**79S)** a) Find the circumference of the following circles.  
 Give both answers to 1 decimal place.



b) Find the **perimeter** of this semicircle  
 to 1 decimal place.



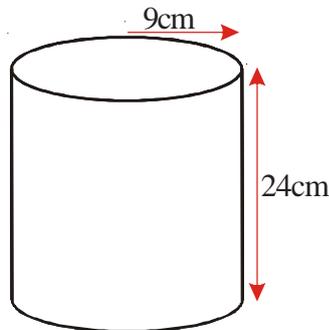
- 80T)** a) Change the following to percentages.  
Give your answers to 1 decimal place.
- (i) 17 out of 67
  - (ii) 134 out of 386
- b) If Sue scores 82 marks out of a possible 120 marks, what was her score as a percentage?

- a) (i) 25.4%  
(ii) 34.7%
- b) 68.3%

- 80S)** a) Change the following to percentages.  
Give your answers to 1 decimal place.
- (i) 44 out of 78
  - (ii) 12.6 out of 59
- b) If Sue scores 14 marks out of a possible 75 marks, what was her score as a percentage?

### Grade D Clip 53

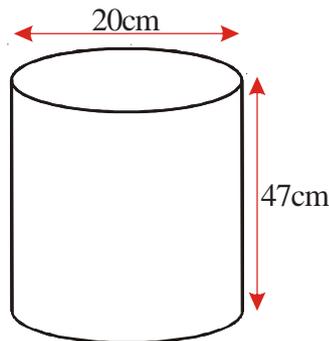
- 81T)** Find the volume of this cylinder.  
Give your answer to 1 decimal place.



### Grade D Clip 122

$$\text{Volume} = 6107.3\text{cm}^3$$

- 81S)** Find the volume of this cylinder.  
Give your answer to 1 decimal place.



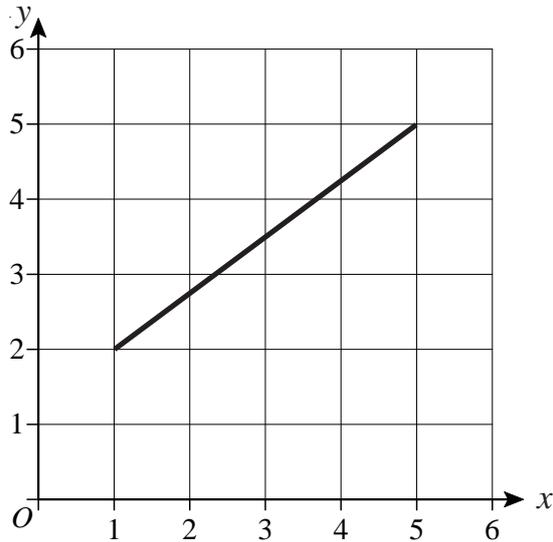
**82T)** Evaluate  $\frac{\sqrt{8.2^3 + 2.3^2}}{(12.4 - 7.3)^2}$

### Grade D Clip 63

$$\frac{23.59360083}{26.01} = 0.907097302$$

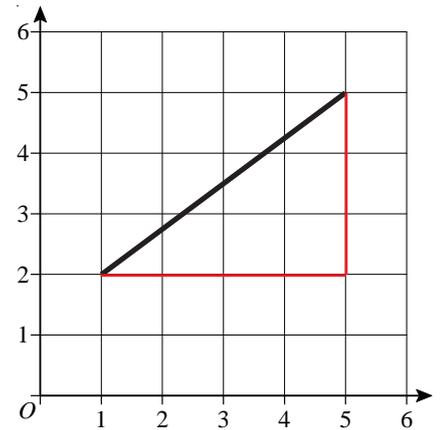
**82S)** Evaluate  $\frac{19.6^2 + \sqrt{7^3 + 2^5}}{5^3 - \sqrt{56}}$

**83T)** Find the length of the line.

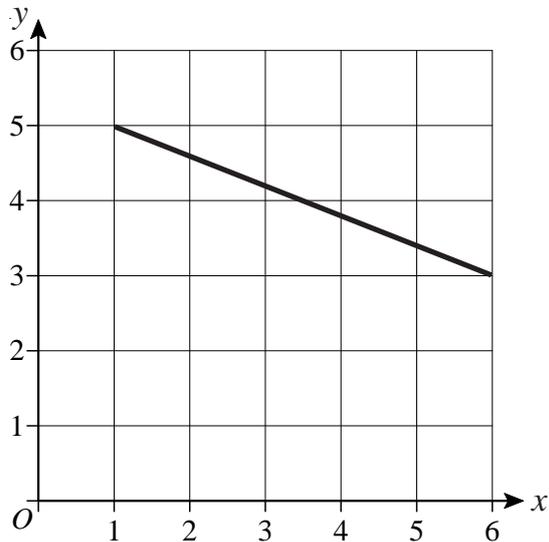


Grade C  
Clip 119

5cm



**83S)** Find the length of the line to 1 decimal place.



**84T)** a) A cyclist travels 12 miles in 2 hours.  
What is the cyclist's speed in mph?

b) Sue walks for 45 minutes at 14mph.  
How far does she travel?

c) A piece of lead has a mass of 340g and a  
volume of  $30\text{cm}^3$ .  
Work out its density in  $\text{g/cm}^3$ .

**84S)** a) A cyclist travels at 14.3mph for 4 hours.  
What distance does he cover?

b) Sue drives at an average speed of 57mph and covers  
a distance of 256.5 miles.  
How long does the journey take in hours  
and minutes?

c) A piece of lead has a density of  $12\text{g/cm}^3$  and a  
mass of 2kg.  
Work out its volume in  $\text{cm}^3$ .

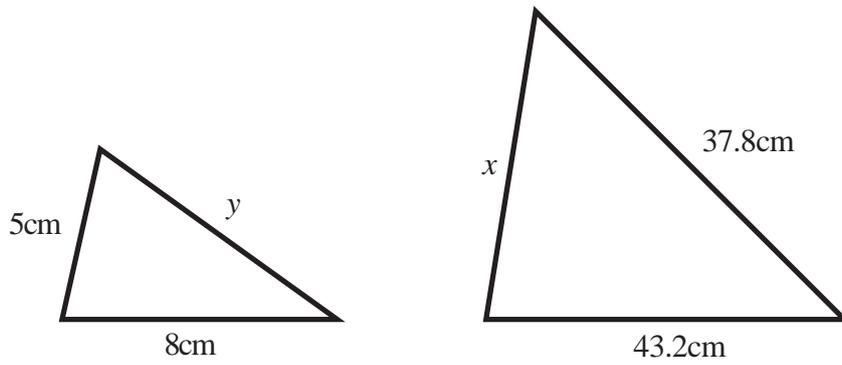
a) 6mph

b) 10.5 miles

c)  $11.3\text{g/cm}^3$

Grade C  
Clip 126

**85T)** The two triangles are similar.

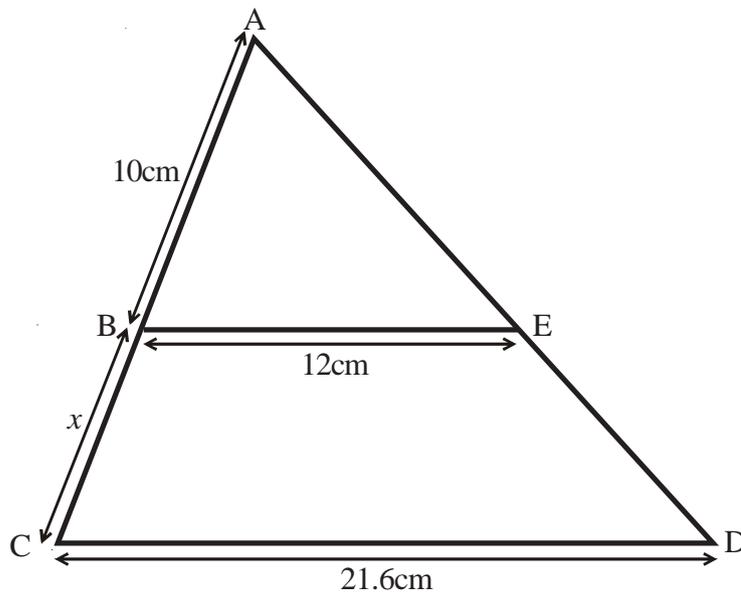


- a) Work out the size of  $x$ .
- b) Work out the size of  $y$ .

- a)  $x = 27\text{cm}$
- b)  $y = 7\text{cm}$

**85S)** BE is parallel to CD  
Find the length of BC.

Grade C  
Clip 123



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