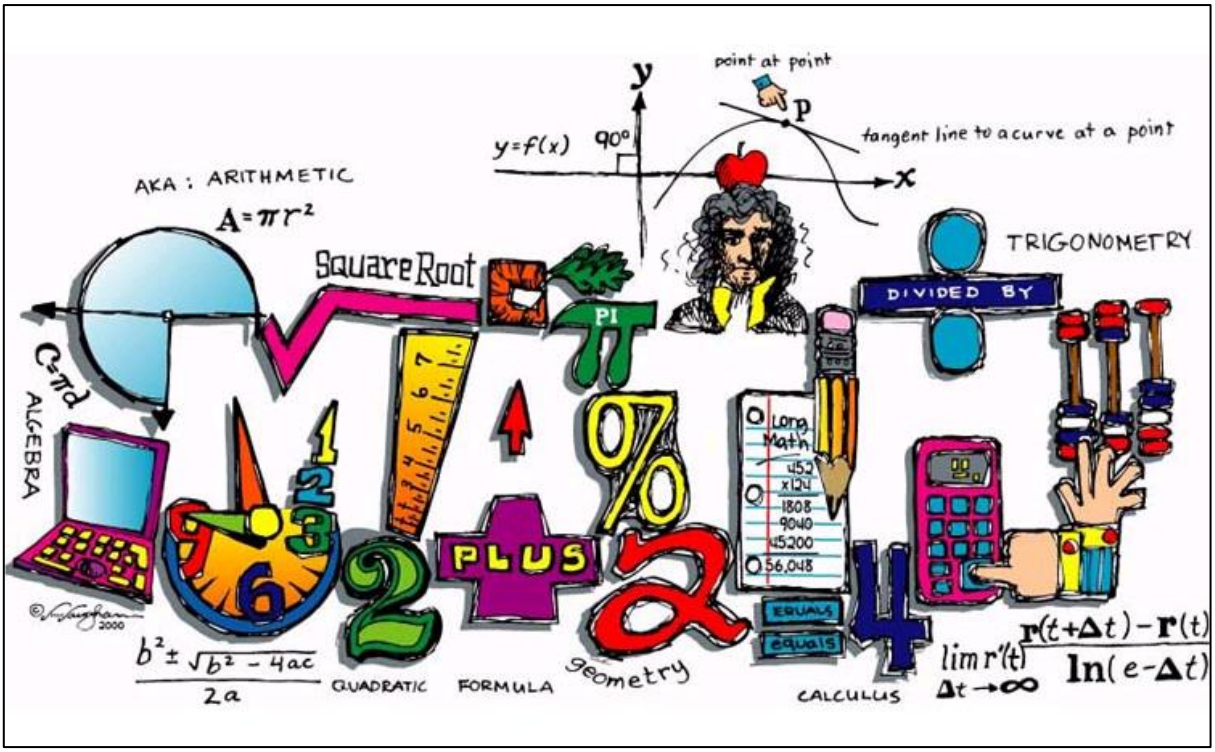

NAME:	**FORM:**
MATHS CLASS:	**TEACHER:**
CURRENT GRADE:	
TARGET GRADE:	
TARGET SCORE:	
EXAM SESSION:	

GCSE MATHEMATICS FOUNDATION REVISION BOOKLET

CONTENTS:

TOPIC

Prime Numbers

1. a) **Express 32 and 56 as a product of prime factors.**

   b) **By comparing the answers to (a) find the HCF of 32 and 56**

2. **By considering the product of prime factors, find the highest common factors of:**
   a) 45 and 99 b) 99 and 135 c) 45 and 135

3. **Find the lowest common multiple of 60 and 72**

4. **Two lighthouses can be seen from the top of a hill.**
   The first flashes once every 8 seconds, and the other flashes once every 15 seconds.
   If they flash at the same time, how long will it be until they flash at the same time again?

Exam Questions

Work out the Highest Common Factor (HCF) of 63 and 105.

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Answer .....

(Total 2 marks)

Jenny is organising a barbecue.
There are 30 bread rolls in a pack.
There are 16 sausages in a pack.
She needs **exactly** the same number of bread rolls as sausages.
What is the smallest number of each pack she must buy?
You **must** show all your working.

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Answer ..... packs of rolls

and ..... packs of sausages

(Total 3 marks)

Write 108 as the product of its prime factors.
Give your answer in index form.

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Answer .....

(Total 3 marks)

REVIEW		**REFLECTION / EVALUATION**
		**The parts of this topic where I am confident are...**
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		**Other comments/reminders...**

Fractions, Decimals and Percentages

1. **Find:**
   a) $^3/_4$ of £120 b) $^4/_5$ of 150kg c) $^3/_7$ of 210cm

2. **Find:**
   a) 25% of £360 b) 35% of 800kg c) 95% of 460cm

   d) 24% of £95 e) 32% of 175g f) 98% of £120

3. **Gareth weighed 90kg. He went on a diet to try to reduce his weight by 10%.**
   a) How much did he try to lose?

   b) He actually lost 17% of his body weight. How much was this?

4. **A new born baby girl weighed 4kg. In the first three months her weight increased by 60%. How much weight had the baby gained?**

5. **Express these as percentages:**
   a) 12 out of 80 b) 27 out of 30 c) 260 out of 400

6. **A glass of drink contains 50ml of fruit juice and 200ml of lemonade. What percentage of the drink is lemonade?**

Exam Questions

Write 65%, 0.7 and $\frac{16}{25}$ in order of size starting with the smallest.

You **must** show your working.

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Answer .....

(Total 3 marks)

Tom is 60.

His daughter Fiona is $\frac{3}{5}$ of his age.

His grandson James is $\frac{4}{15}$ of his age.

How many years older than James is Fiona?

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Answer .....

(Total 4 marks)

Work out the value of $\frac{1}{4} + \frac{2}{3}$

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Answer .....

(Total 2 marks)

Work out

(a) $\frac{2}{5} \times \frac{1}{4}$

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.....

Answer .....

(1)

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

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Answer .....

(2)

(Total 3 marks)

The table shows Ann's marks in two tests.

Test	Mark
1	60 out of 80
2	70 out of 100

In which test did Ann do better?
You **must** show your working.

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Answer .....

(Total 3 marks)

(c) Work out 0.1 × 0.9

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Answer .....

(1)

REVIEW		REFLECTION / EVALUATION
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Indices

1. **What is the answer to the following:**
   a) √121 b) √169 c) √400 d) √1

2. **Evaluate the following:**
   a) 7^2 b) 15^2 c) 4^3 d) 2^3

3. **Simplify the following expressions, giving your answer in index notation:**
   a) $3^7 \times 3^6 =$ b) $5^6 \times 5^4 =$ c) $11^3 \times 11^9 =$ d) $2^5 \times 2^3 =$

   e) $7^5 \div 7^2 =$ f) $6^4 \div 6^2 =$ g) $\frac{8^{12}}{8^4} =$ h) $\frac{7^2}{7^6} =$

4. **Simplify the following expressions, giving your answer in index notation:**
   a) $(2^3)^4 =$ b) $(5^2)^4 =$ c) $(3^6)^7 =$ d) $(4^4)^4 =$

5. **Simplify the following expressions, giving your answer in index notation:**
   a) $y^3 \times y^4 =$ b) $a^6 \times a^9 =$ c) $e^5 \div e^9 =$ d) $(n^4)^5 =$

6. **Simplify the following expressions, giving your answer in index notation:**
   a) $\frac{x^4 \times x^5}{x^3} =$ b) $\frac{y^{12} \times y^6}{y^2 \times y^7} =$ c) $(x^3 \times x^4)^5 =$

Exam Questions

Glynn says that $\sqrt{16+9}$ is the same as $\sqrt{16}+\sqrt{9}$

Show that Glynn is wrong.

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(Total 2 marks)

(a) Work out the value of $\sqrt{25} \times \sqrt[3]{64}$

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Answer .....

(2)

(b) (i) Write down the value of 9^2.

Answer .....

(1)

(ii) Tick the box for the statement that is true.

The sum of the squares of two odd numbers is always odd ☐

The sum of the squares of two odd numbers is always even ☐

The sum of the squares of two odd numbers could be odd or even ☐

Give an example to justify your choice.

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(2)
(Total 5 marks)

(c) Here is another pattern.

$2^2 = 4$	and	$1 \times 3 = 3$
$4^2 = 16$	and	$3 \times 5 = 15$
$6^2 = 36$	and	$5 \times 7 = 35$
$8^2 = 64$	and	$7 \times 9 = 63$
$10^2 = 100$	and	$9 \times 11 = 99$

You are given that $88^2 = 7744$

Write down the value of 87×89

Answer .....

(1)

(a) Simplify

REVIEW		REFLECTION / EVALUATION
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Answer .....

(1)

(b) (i) If $y = -1$ which answer in part (a) is positive?

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Answer .....

(1)

(ii) If $y = 0.5$ which answer in part (a) has the greatest value?

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Answer .....

(1)
(Total 5 marks)

Ratio

1. **Simplify the following ratios:**

   a) 5:10 **b) 8:12** **c) 6:27** **d) 22:55**

   e) 4:12:60 **f) 15:50:100** **g) 8:40:2** **h) 51:17:34**

2. **Jennifer mixes 600ml of orange juice with 900ml of apple juice to make a fruit drink. Write the ratio of orange juice to apple juice in its simplest form.**

3. **In a school there are 850 pupils and 40 teachers. Write the ratio of teachers to pupils.**

4. **A map is drawn with the scale 1:50,000. calculate the actual distances, in km that the following lengths on the map represent.**
   a) 2cm b) 9cm c) 30cm

5. **On a map, a distance of 5cm represents an actual distance of 15km. Write the scale of the map in the form 1:n**

6. **Ben buys 21 football stickers for 84p. Calculate the cost of:**
   a) 7 stickers b) 12 stickers c) 50 stickers

7. **16 teams each with the same number of people enter a quiz. At the semi-final stage there are 12 people left in the competition. How many people entered the quiz?**

Exam Questions

Mohsin invests some money in a cash ISA (c) and in a savings account (s).
The ratio of the amounts of money invested is c : s = 3 : 7
He invests £3600 in the cash ISA.

How much money does he invest altogether?

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Answer £ .....

(Total 2 marks)

Divide £7200 in the ratio 2 : 3 : 7

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Answer £..... £ ..... £ .....

(Total 3 marks)

Alex and Ben share £520 in the ratio 1:3

(a) How much does Ben receive?

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Answer £ .....

(2)

The sizes of the interior angles of a quadrilateral are in the ratio

3 : 4 : 6 : 7

Calculate the size of the largest angle.

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Answer .....

(Total 3 marks)

REVIEW		REFLECTION / EVALUATION
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Number Problems - Exam Questions Only

Greg goes shopping with £20.
He spends £5.60 on his lunch.

He needs £1.30 for his bus fare.

He sees this advert for shoes.

Shoes

Normal Price £15

Sale price 10% off normal price

Does he have enough money to buy them?

You **must** show your working

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(Total 4 marks)

Sam has £1.65
Vicki has 75p

How much must Sam give Vicki so that they each end up with the same amount?

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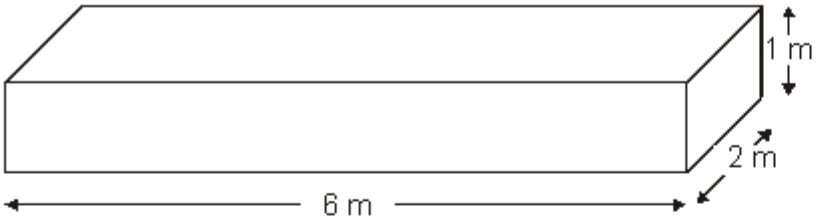
Answer .....pence

(Total 3 marks)

The shape of a flower bed is a cuboid as shown.

Not drawn accurately



1 m^3 of soil weighs 1.25 tonnes

A gardener wants to fill the flower bed with soil as cheaply as possible.

The table shows the costs for Company A and Company B.

Company A	£ 49.50 per tonne	Delivery £ 30
Company B	10 tonnes for £ 430 then £ 67.50 per extra tonne	Delivery free

Which company should she use and how much will it cost?

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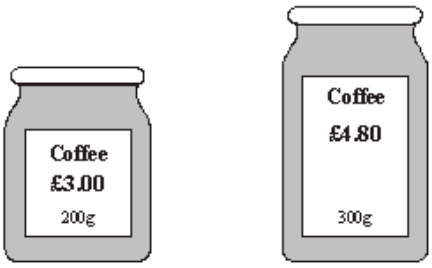
Answer Company .....

£ .....

(Total 6 marks)

A supermarket sells jars of coffee of the same brand in two different sizes.

Regular Large



Which jar gives the better value for money?
You **must** show your working.

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Answer .....

(Total 3 marks)

Here are instructions for cooking a turkey.

> Cook for 15 minutes at 220 °C
>
> Reduce the oven temperature to 160 °C and cook for 40 minutes per kilogram.

Kirsty is going to cook a 7 kilogram turkey.
She wants to take it out of the oven at 12:45 pm.

At what time must she start to cook it?

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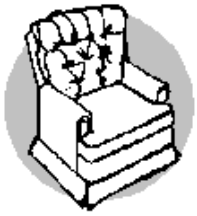
Answer .....

(Total 4 marks)

Three shops advertise the same luxury chair.
Each shop has a special offer.

Shop A
Chair – normal price £600

Special Offer – 30% off normal price



Shop B
Chair – normal price £550

Special Offer – $\frac{1}{5}$ off normal price

Shop C
Chair – normal price £820

Special Offer – buy one get one free

(a) Mutasem wants to buy **two** of these luxury chairs.

At which shop is the price of the two chairs the cheapest?
You **must** show your working.

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Answer: Shop .....

(5)

REVIEW		REFLECTION / EVALUATION
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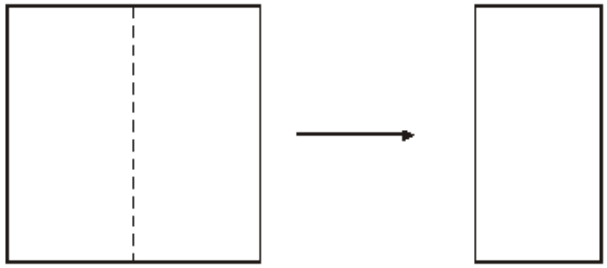
Area and Perimeter - Exam Questions Only

You have a square piece of paper which is folded in half to form a rectangle as shown.



The perimeter of the rectangle is 39 centimetres.

What is the area of the square you started with?

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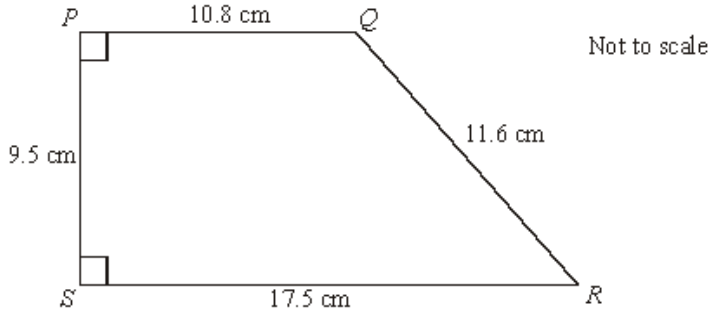
Answer ..... cm^2

(Total 4 marks)

In the diagram below, PQ = 10.8 cm, QR = 11.6 cm, RS = 17.5 cm and PS = 9.5 cm.
The angles at P and S are 90°



Calculate the area of $PQRS$.

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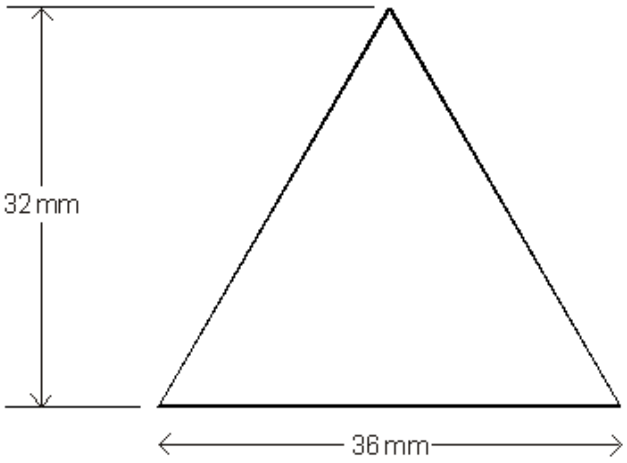
Answer ..... cm^2

(Total 3 marks)

The base of a triangle is 36 mm.

The height of the triangle is 32 mm.



Not drawn accurately

(a) Work out the area of the triangle.

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Answer ..... mm^2

(2)

(b) The dimensions of the triangle are given to the nearest millimetre.

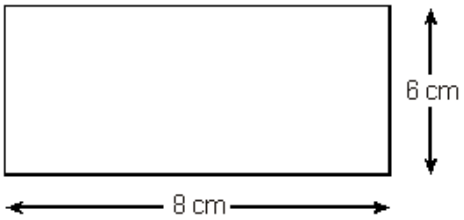
Write down the least possible length of the base of the triangle.

Answer ..... mm

(1)

(Total 3 marks)

(a) The diagram shows a rectangle.



Not drawn accurately

Work out the area of the rectangle.
State the units of your answer.

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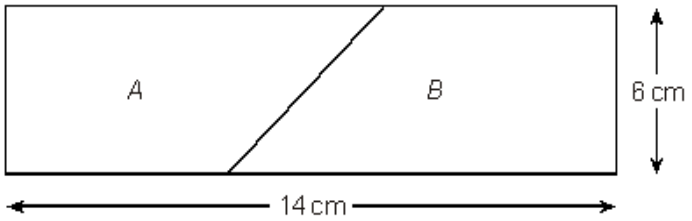
Answer .....

(3)

(b) The diagram shows a rectangle made from two congruent shapes *A* and *B*.



(i) Write down the mathematical name of shape *B*.

Answer .....

(1)

(ii) Explain how you could work out the area of shape *B*.

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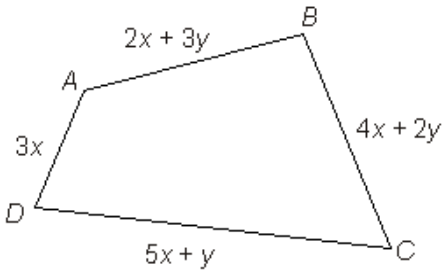
(2)

ABCD is a quadrilateral.



Not drawn accurately

(a) Write down an expression for the perimeter of the quadrilateral in terms of *x* and *y*. Simplify your answer.

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Answer .....

(2)

(b) When $x = 4$ cm, the perimeter of the quadrilateral is 68 cm.

Find the value of *y*.

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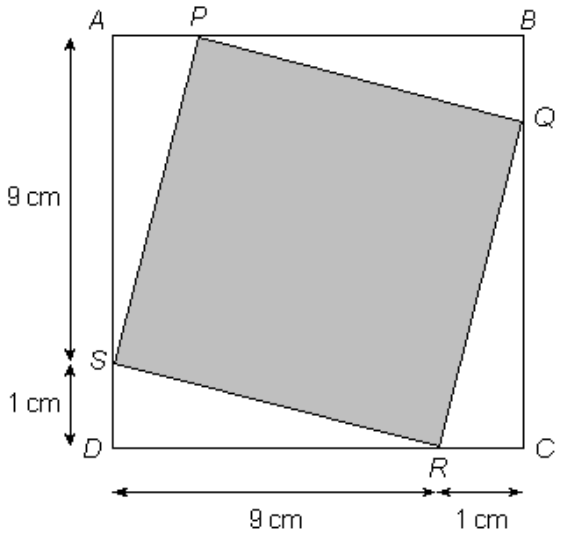
Answer .....cm

(3)

(Total 5 marks)

ABCD is a square.
PQRS is a square with vertices on the sides of *ABCD*.
AS = *DR* = *CQ* = *BP* = 9 cm
PA = *SD* = *RC* = *QB* = 1 cm



What is the area of the shaded square *PQRS*?

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Answer ..... cm^2

(Total 3 marks)

REVIEW		REFLECTION / EVALUATION
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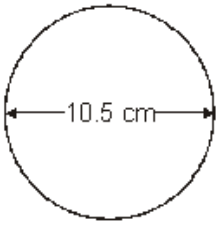
Circles

1. **Calculate the circumference and area of a circle where the diameter (D) is:**
   a) D = 10cm b) D = 11m c) D = 12.3mm

2. **Calculate the circumference and area of a circle where the radius (R) is:**
   a) R = 12cm b) R = 8.2m c) R = 12 ¼ mm

Exam Questions

Work out the circumference of a circle of diameter 10.5 cm.



Not drawn accurately

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Answer ..... cm

(Total 2 marks)

The radius of the semicircle is 10 cm.

Not drawn accurately

Work out the area of the semicircle.

State the units of your answer.

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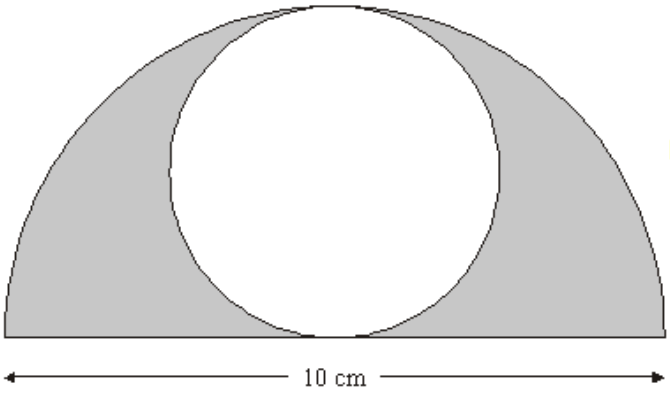
Answer .....

(Total 3 marks)

A circle fits inside a semicircle of diameter 10 cm as shown.



Not drawn accurately

Calculate the shaded area.

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Answer ..... cm^2

(Total 3 marks)

REVIEW		REFLECTION / EVALUATION
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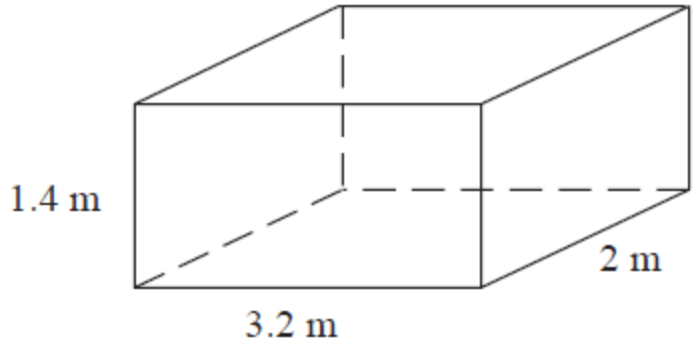
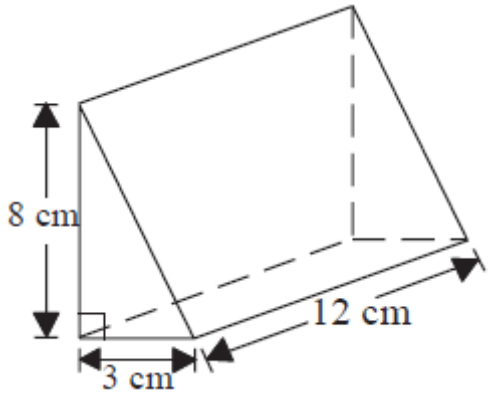
3D Shapes

1. **Calculate the volume of the following 3D shapes:**

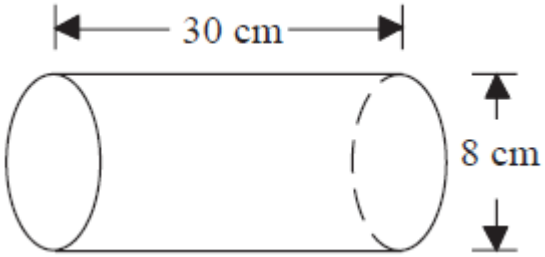
a)



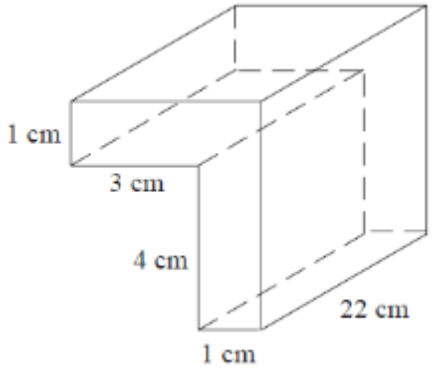
b)



c)

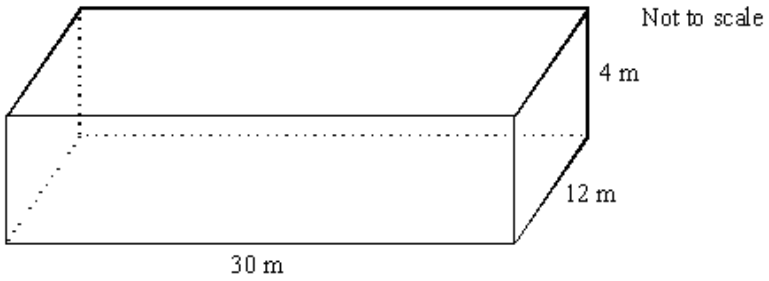


d)



Exam Questions

A school hall is in the shape of a cuboid.



(a) The school hall is 30 m long, 12 m wide and 4 m high.

(i) Calculate the volume of the hall.

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Answer ..... m^3

(2)

(ii) Calculate the total area of the **four walls** of the hall.

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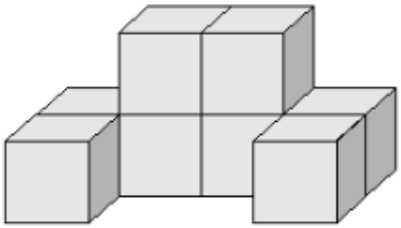
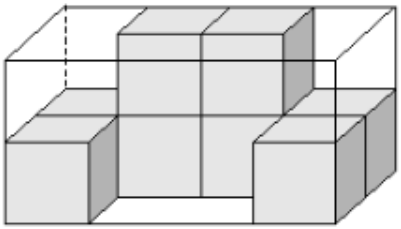
Answer ..... m^2

(3)

Centimetre cubes are fitted together to make a solid as shown on the left.





The solid is packed into a box as shown on the right.

The box is a cuboid.

Work out the volume of the box.

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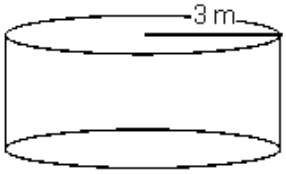
Answer ..... cm^3

(Total 3 marks)

The diagram shows two boxes that are cuboids.

(b) The diagram shows a cylindrical water tank.
The cross-section of the tank is a circle of radius three metres.
The depth of water in the tank is 0.5 metres.



Not drawn accurately

Calculate the volume of water in the tank.
Give your answer in terms of π.

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Answer ..... m^3

(2)

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Answer .....

(Total 4 marks)

REVIEW		REFLECTION / EVALUATION
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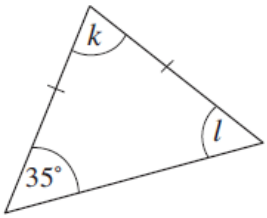
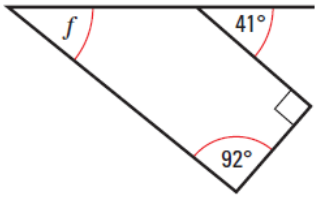
Shapes – Interior/Exterior Angles

1. **Calculate the size of the missing angles:**

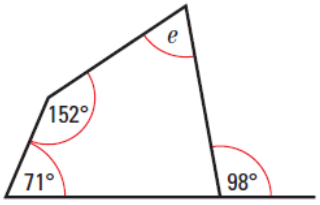
a)



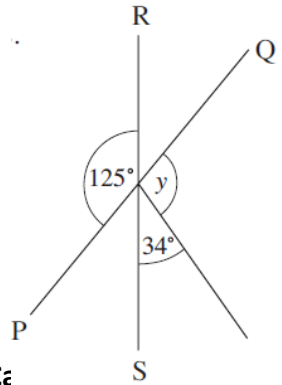
b)



c)

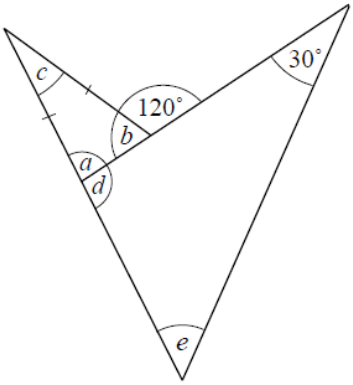


d)

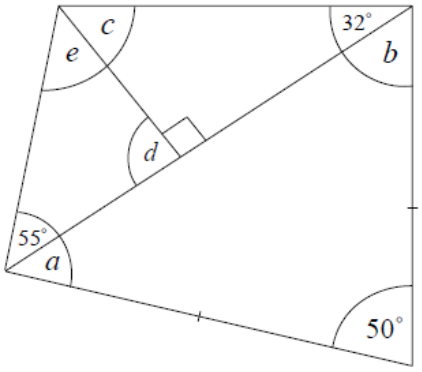


Ca l 4 angles

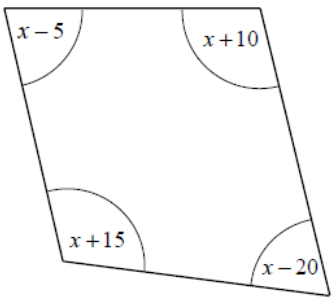
e)



f)



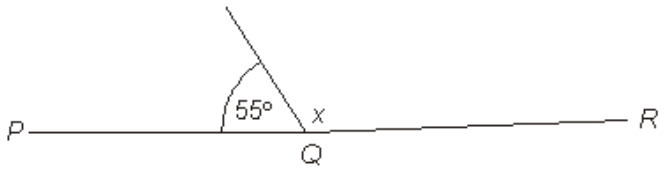
g)



Exam Questions

(b) In the diagram, angle x is 115°.

Not drawn accurately



Explain why PQR is **not** a straight line.

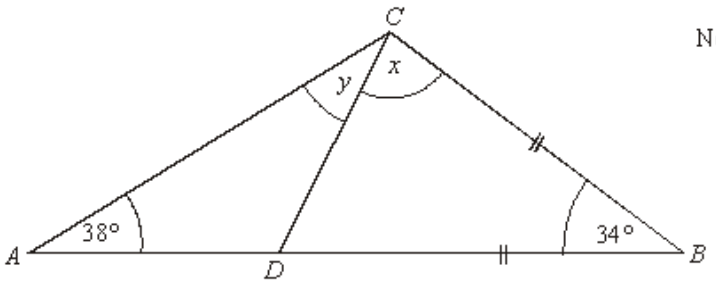
.....

.....

(2)

ABC is a triangle.
D is a point on AB such that $BC = BD$.

Not drawn accurately



(a) Work out the value of x.

.....

.....

Answer ..... degrees

(2)

(b) Work out the value of y.

.....

.....

Answer ..... degrees

(2)

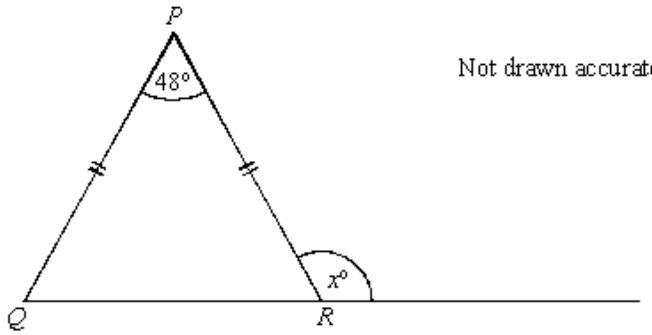
(c) Does $AD = DC$?
Give a reason for your answer.

.....

.....

(1)
(Total 5 marks)

(a) Triangle PQR is isosceles.
$PQ = PR$.



Not drawn accurately

Work out the value of x.

.....

.....

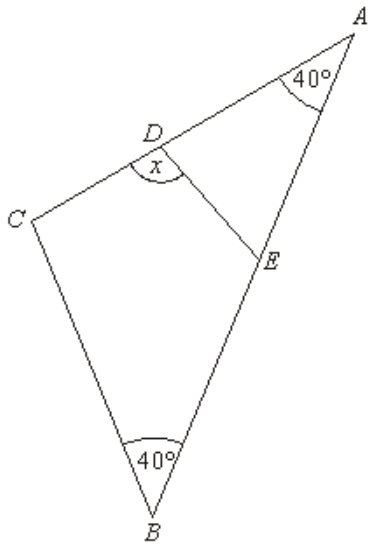
.....

.....

Answer ..... degrees

(3)

ABC is an isosceles triangle. $BCDE$ is a kite.



Not drawn accurately

Work out the value of x.

.....

.....

.....

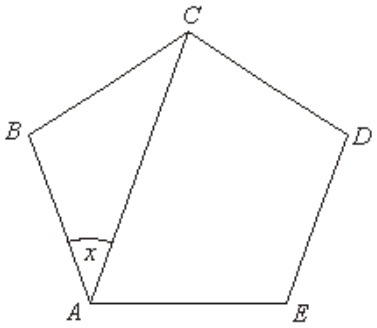
.....

.....

Answer ..... degrees

(Total 3 marks)

ABCDE is a regular pentagon.



Not drawn accurately

Work out the value of *x*.

.....

.....

.....

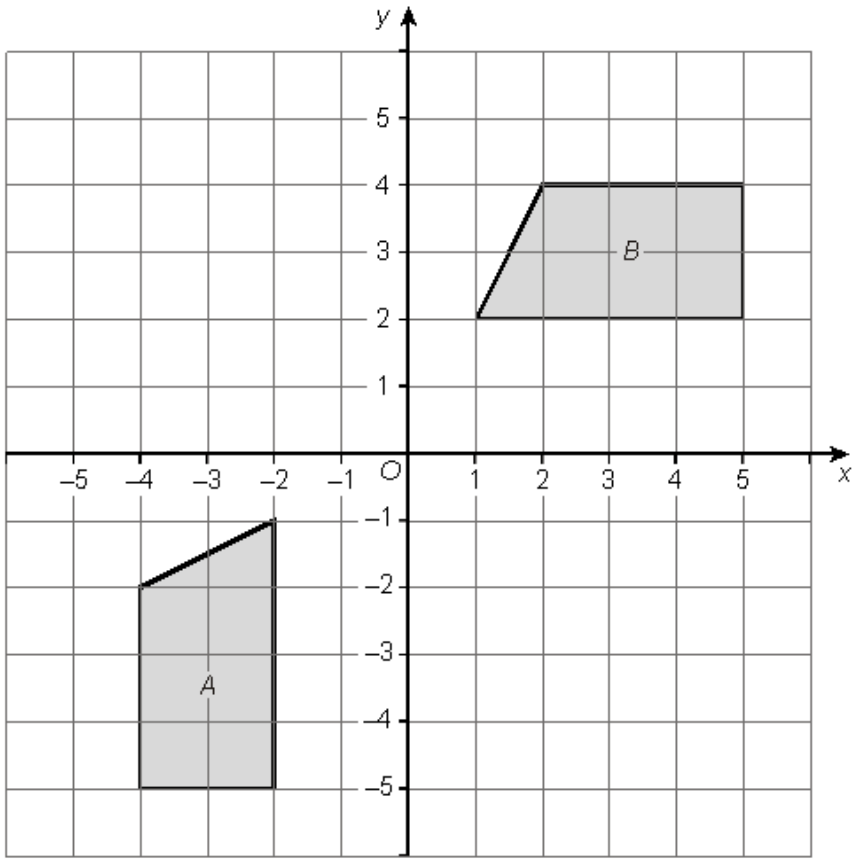
Answer *x* = ... degrees

(Total 4 marks)

Transformations - Exam Questions Only

REVIEW		REFLECTION / EVALUATION
		The parts of this topic where I am confident are...
		The areas of this topic that I still need to revise are...
		Other comments/reminders...

The diagram shows two identical shapes *A* and *B*.



Describe fully the **single** transformation which takes shape *A* to shape *B*.

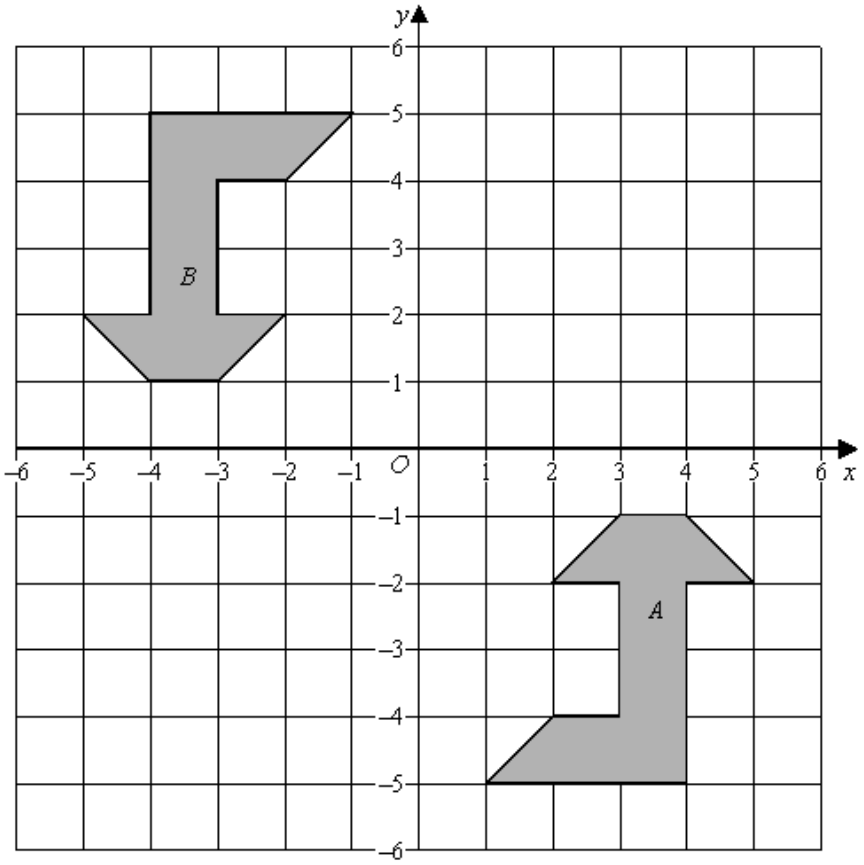
.....

.....

.....

(Total 2 marks)

The diagram shows two identical shapes, *A* and *B*.



Describe fully the **single** transformation which takes shape *A* to shape *B*.

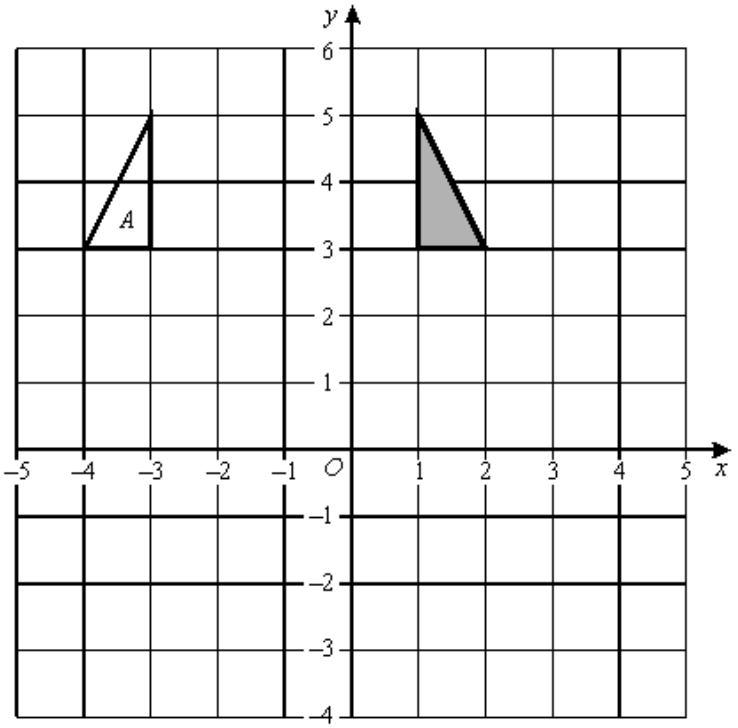
.....

.....

.....

(Total 3 marks)

(a)



(i) Describe fully the **single** transformation that takes the shaded triangle to triangle *A*.

.....

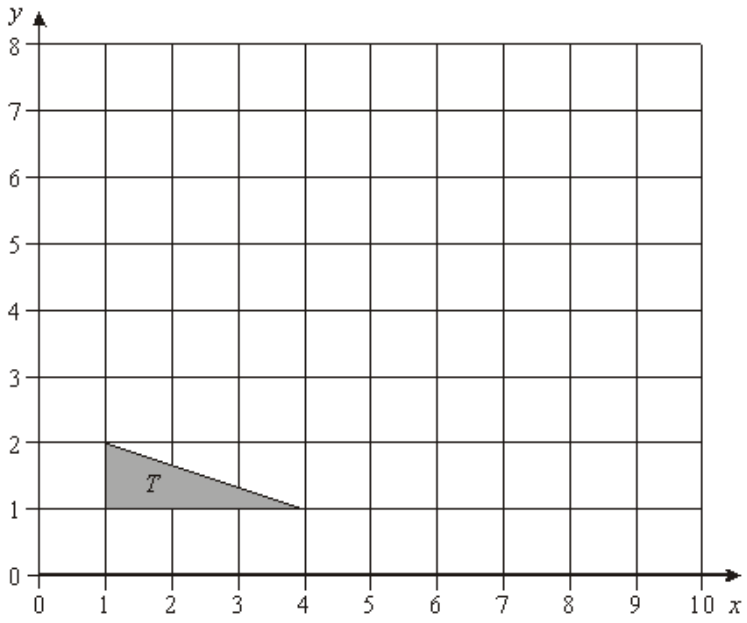
.....

(2)

(ii) On the grid above translate the **shaded** triangle by 2 squares to the right and 4 squares down.

(1)

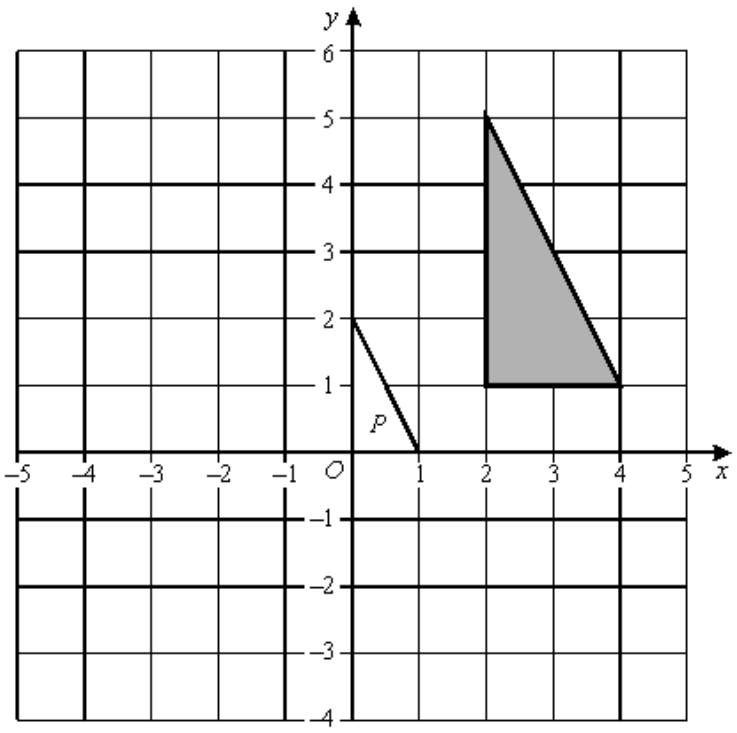
The vertices of triangle *T* are (1, 1), (1, 2) and (4, 1).



Enlarge triangle *T* by scale factor 2, with (0, 0) as the centre of enlargement.

(Total 3 marks)

(b) Triangle P is an enlargement of the shaded triangle.



(i) What is the scale factor of the enlargement?

Answer .....

(1)

(ii) What is the centre of enlargement?

Answer (....., ...)

(1)
(Total 5 marks)

REVIEW		REFLECTION / EVALUATION
		**The parts of this topic where I am confident are...**
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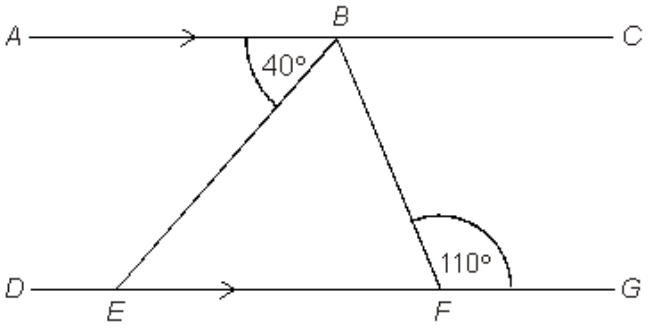
		**Other comments/reminders...**

Parallel Lines (Angles) - Exam Questions Only

AC and *DG* are parallel lines.
Angle *ABE* = 40°
Angle *BFG* = 110°



Not drawn accurately

(a) Explain why angle *BEF* is 40°

.....

.....

(1)

(b) Show, giving reasons, that triangle *BEF* is isosceles.

.....

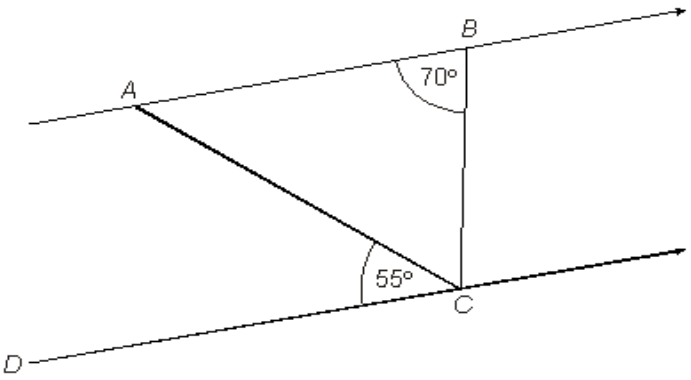
.....

.....

.....

(3)

In the diagram *AB* is parallel to *DC*.
Angle *ABC* = 70°
Angle *ACD* = 55°



Not drawn accuratelly

Show that triangle *ABC* is isosceles.
You **must** give reasons in your working.

.....

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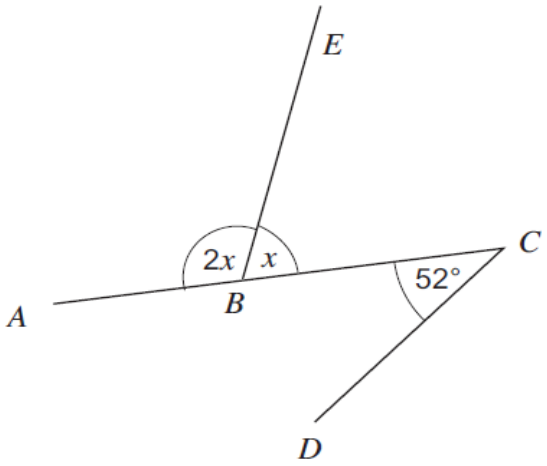
.....

(Total 3 marks)

ABC is a straight line.

Angle ABE is twice the size of angle CBE.



Not drawn accurately

Show that BE is **not** parallel to DC.

.....

.....

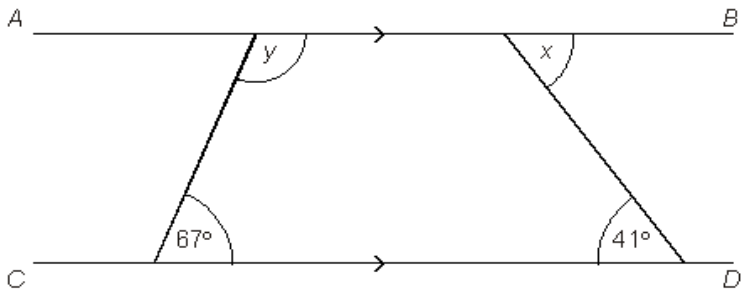
.....

.....

(3 marks)

In the diagram AB and CD are parallel.

Not drawn accurately



(a) Write down the value of x.

Answer ..... degrees

(1)

(b) Work out the value of y.

.....

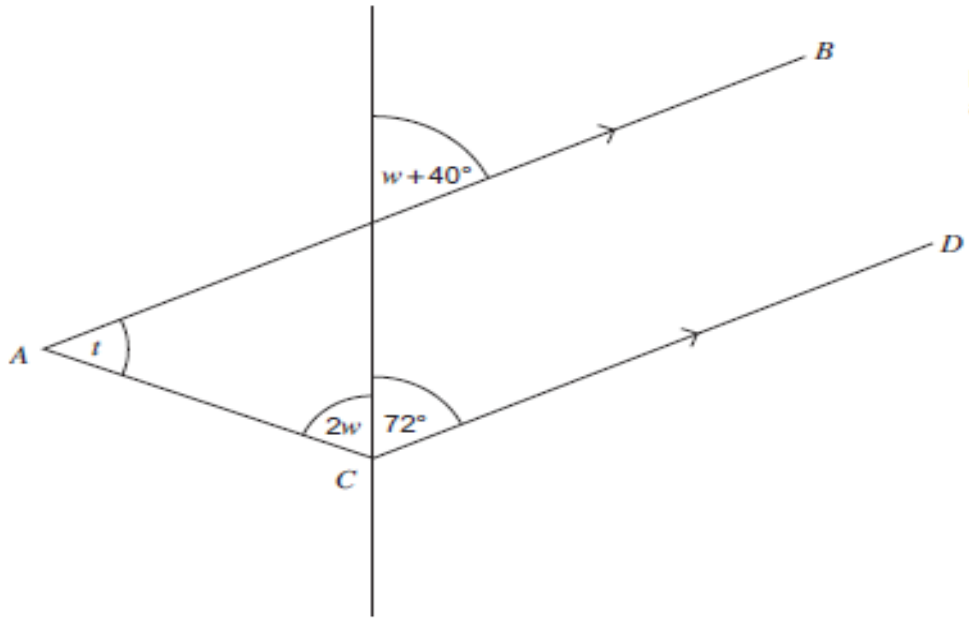
.....

Answer ..... degrees

(2)

(Total 3 marks)

AB is parallel to CD.



Work out the value of t.

.....

.....

.....

.....

.....

Answer ..... degrees *(5 marks)*

REVIEW		REFLECTION / EVALUATION
		**The parts of this topic where I am confident are...**
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		**Other comments/reminders...**

Algebra (Simplification and Factorisation etc...)

1. **Expand the following:**

a)	**3 (a + 1) =**	**b)**	**2 (5x - 12) =**	**c)**	**6 (2y - 5) =**
d)	**-2 (3x - 8) =**	**e)**	**-5 (3 - 2x) =**	**f)**	**-3 (-4 - x) =**
g)	**x (x + 1) =**	**h)**	**a (4a - 5) =**	**i)**	**6y (5 - 2y) =**

2. **Expand and simplify the following:**

a)	**3 + 2 (x - 8)**	**b)**	**5 (x + 7) - 12**	**c)**	**4 (x + 2) + 2 (x - 1)**
d)	**2x (x + 1) - x (7 - x)**	**e)**	**3x (x - 2) - 4 (x - 6)**		

3. **Factorise the following expressions:**

a)	**6x + 24 =**	**b)**	**12x - 14 =**	**c)**	**3a - 24 =**
d)	**10 + 25x =**	**e)**	**$3x^2 + 6x$ =**	**f)**	**$14x^2 + 21x$ =**

4. **Expand and simplify the following:**

a)	**(x + 1)(x + 6)**	**b)**	**(2x + 1)(3x - 1)**	**c)**	**(6n + 1)(4n - 2)**

5. **Find the value of the following expressions when a=2 and g=3:**

a)	**3a - g**	**b)**	**8a - 5g**	**c)**	**31 + 9a - 5g**
d)	**6(7a - g)**	**e)**	**30 + 2 (4a + g)**	**f)**	**9g - (7 - a)**

Exam Questions

(a) Simplify $8a - b + 4a - 2b$

.....

.....

Answer .....

(2)

(b) Multiply out $x(x + 7)$

.....

Answer .....

(1)

(Total 3 marks)

Complete this table.

Expression	Value
$2x$	8
$5x$	
$2x + 3y$	5
y	
$3x - y$	

.....

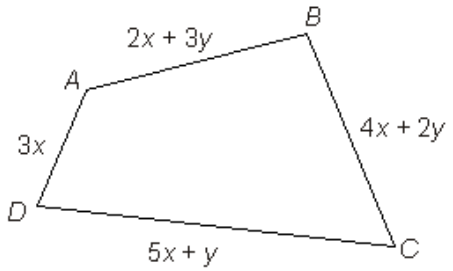
.....

.....

.....

(Total 5 marks)

ABCD is a quadrilateral.



Not drawn accurately

(a) Write down an expression for the perimeter of the quadrilateral in terms of x and y.
Simplify your answer.

.....

.....

Answer .....

(2)

(b) When $x = 4$ cm, the perimeter of the quadrilateral is 68 cm.

Find the value of y.

.....

.....

.....

.....

Answer .....cm

(3)

(Total 5 marks)

(d) Factorise $15t + 25$

.....

Answer .....

(1)

(b) Factorise $2x^2 - x$

.....

Answer .....

(1)

(a) Expand and simplify $2(3x-2)+4(x+5)$

.....

.....

.....

Answer .....

(2)

REVIEW		REFLECTION / EVALUATION
		**The parts of this topic where I am confident are...**
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		**Other comments/reminders...**

Sequences - Exam Questions Only

(a) The rule for the next term of a sequence is

Multiply the previous term by three and subtract one.

The first two terms of the sequence are 2 and 5.

Write down the next **two** terms.

.....

.....

Answer 2 5 ....

(2)

(b) The *n*th term of a different sequence is $5n$.

The first term is 5

Write down the next **three** terms.

Answer 5 ....

(1)

(c) Work out the *n*th term of this sequence.

7 10 13 16 19

.....

Answer .....

(2)

(Total 5 marks)

(b) **Tom builds fencing from pieces of wood as shown below.**

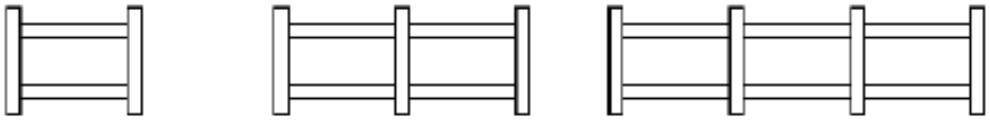

Diagram 1
4 pieces of wood

Diagram 2
7 pieces of wood

Diagram 3
10 pieces of wood

How many of pieces of wood will be in Diagram *n*?

.....

.....

.....

Answer .....

(2)

4 Here is a sequence of numbers.

35 30 25 20 15

4 (a) Write down the next number in the sequence.

Answer ..... *(1 mark)*

4 (b) Write down the rule for continuing the sequence.

Answer ..... *(1 mark)*

4 (c) Which of the following expressions is the nth term of the sequence?
Circle the correct answer.

$5n + 30$ $5n - 40$ $30 - 5n$ $40 - 5n$

.....

..... *(1 mark)*

4 (d) Here is a different sequence of numbers.

60 54 48 42 36

4 (d) (i) Both sequences are continued.

Write down **two** numbers which are in both sequences.

.....

.....

Answer ..... and ..... *(2 marks)*

4 (d) (ii) Is –25 in both sequences?
Give a reason for your answer.

Yes ☐ No ☐

.....

..... *(1 mark)*

6 Here is a sequence.

8 14 20 26 32 ....

6 (a) Write down the rule for continuing the sequence.

.....

Answer ..... *(1 mark)*

6 (b) Write down the next **two** numbers in the sequence.

Answer ..... and ..... *(1 mark)*

6 (c) The 50^{th} term in the sequence is 302.

What is the 48^{th} term in the sequence?

.....

.....

Answer ..... *(2 marks)*

REVIEW		REFLECTION / EVALUATION
		**The parts of this topic where I am confident are...**
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		**Other comments/reminders...**

Algebra (Graphs) - Exam Questions Only

(a) Complete the table of values for $y = 2x - 1$

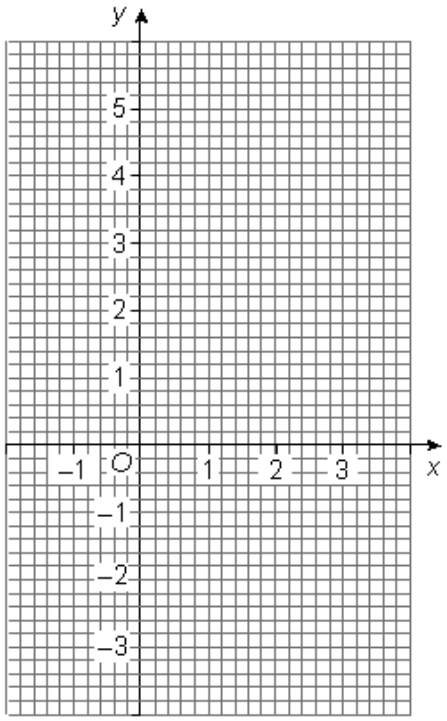
x	–1	0	1	2	3
y	–3		1		5

.....

.....

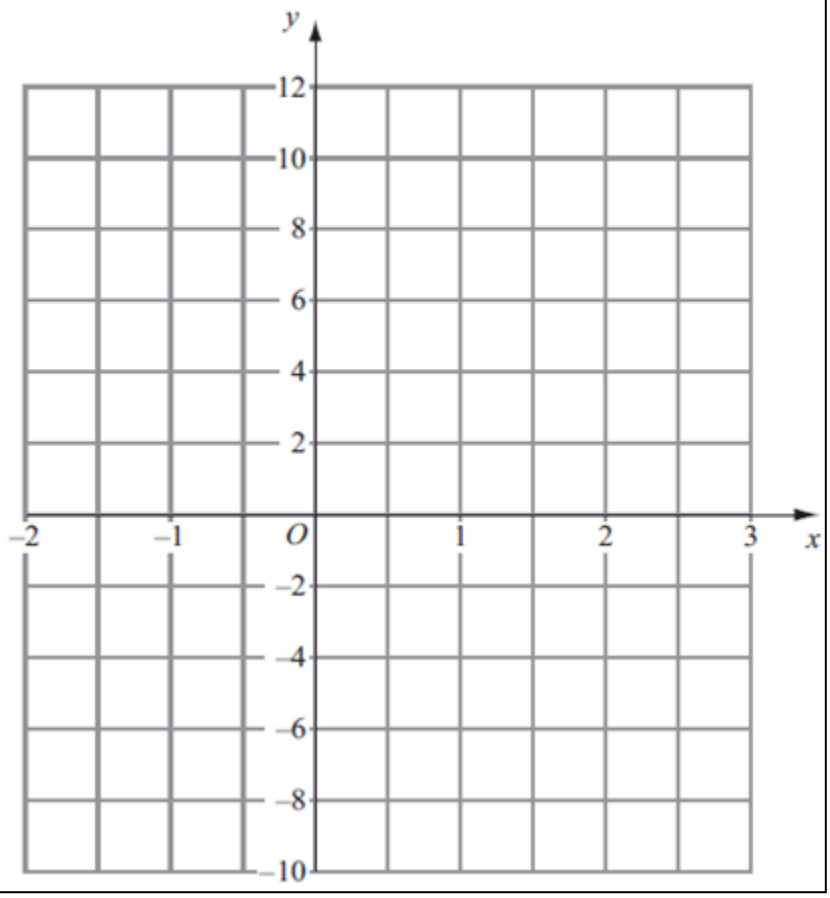
(1)

(b) On the grid below, draw the graph of $y = 2x - 1$ for values of x from –1 to +3



(2)
(Total 3 marks)

19. On the grid, draw the graph of $y = 4x - 2$



(a) Complete this table of values for $y = x^2 - 3$

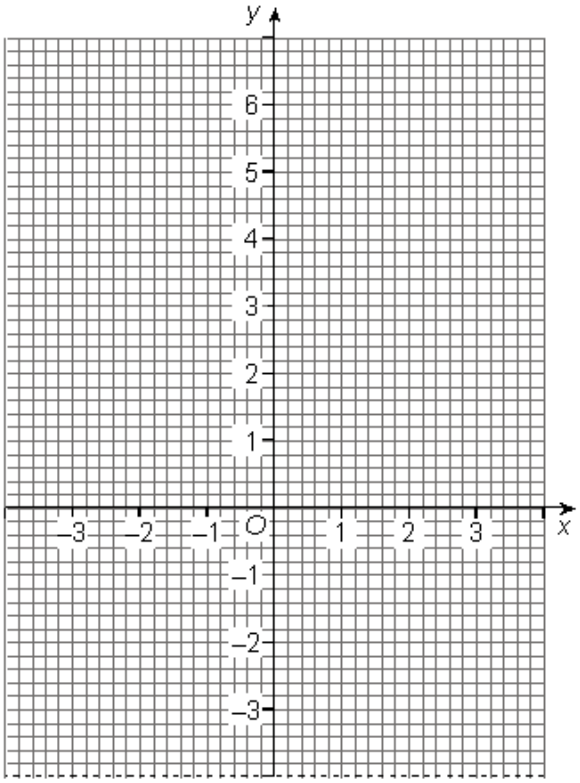
x	–3	–2	–1	0	1	2	3
y	6	1		–3	–2	1	6

.....

.....

(1)

(b) Draw the graph of $y = x^2 - 3$ for values of x from –3 to +3.



(2)
(Total 3 marks)

REVIEW		REFLECTION / EVALUATION
		**The parts of this topic where I am confident are...**
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		**Other comments/reminders...**

Equations and Inequalities

1. **Solve the following equations:**

   a) $x + 6 = 2$ **b)** $3x = -24$ **c)** $x - 12 = -4$

2. **Solve the following equations:**

   a) $3x + 6 = 48$ **b)** $6x + 12 = 20$ **c)** $6x - 7 = 41$

   d) $3(x - 2) = 12$ **e)** $5(5x + 1) = 20$ **f)** $4(x + 15) = 60$

3. **Solve the following equations:**

   a) $6x + 7 = 2x + 20$ **b)** $14 - 3x = 5$ **c)** $22 - 4x = 18 - 2x$

4. **Solve these inequalities:**

   a) $4x + 6 \leq 18$ **b)** $7x + 2 \geq -19$ **c)** $4(2x - 3) \geq -8$

Exam Questions

(a) Solve $8t - 5 = 19$

.....

.....

Answer t = ...

(2)

(a) Solve the inequality $2x + 3 \geq 1$

.....

.....

Answer .....

(2)

(a) Solve the equation $\frac{x}{20} = -4$

.....

Answer x = ...

(1)

(b) Solve the equation $8w - 5 = 3w + 1$

.....

.....

.....

.....

.....

Answer w = ...

(3)

In the table below, the letters w, x, y and z represent different numbers. The total of each row is given at the side of the table.

w	w	w	w	24
w	w	x	x	28
w	w	x	y	25
w	x	y	z	23

Find the values of w, x, y and z.

.....

.....

.....

.....

Answer w = ... , x = ... , y = ... , z = ...

(Total 4 marks)

REVIEW		REFLECTION / EVALUATION
		**The parts of this topic where I am confident are...**
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		**Other comments/reminders...**

Trial and Improvement - Exam Questions Only

Use trial and improvement to find a solution to the equation

$$x^3 + 6x = 29$$

Continue the table of results.
Give your solution to 1 decimal place.

x	$x^3 + 6x$	Comment
2	20	Too small

.....

.....

.....

.....

Answer x = ... *(4 marks)*

The equation

$$x^3 + 2x = 60$$

has a solution between 3 and 4

Use a trial and improvement method to find this solution.
Give your answer correct to 1 decimal place.
You must show all your working.

A solution of the equation $x^3 - 5x = 31$ lies between $x = 3$ and $x = 4$

Use trial and improvement to find this solution, to one decimal place.
The first trial is shown in the table.

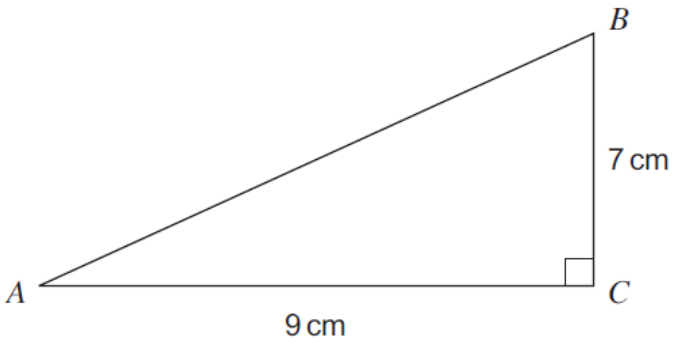
x	$x^3 - 5x$	Comment
3	$27 - 15 = 12$	Too small

Answer $x =$ ..... *(3 marks)*

REVIEW		REFLECTION / EVALUATION
		**The parts of this topic where I am confident are...**
		**The areas of this topic that I still need to revise are...**
		**Other comments/reminders...**

Pythagoras Theorem - Exam Questions Only

Work out length AB as a decimal.



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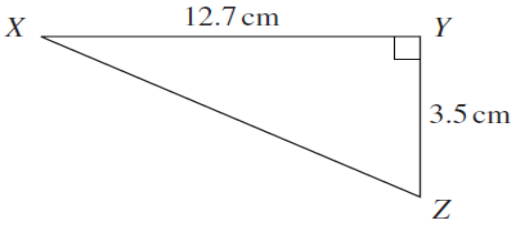
Answer ..... cm *(3 marks)*

In triangle XYZ, angle $Y = 90°$, $XY = 12.7$ cm and $YZ = 3.5$ cm



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Calculate XZ.

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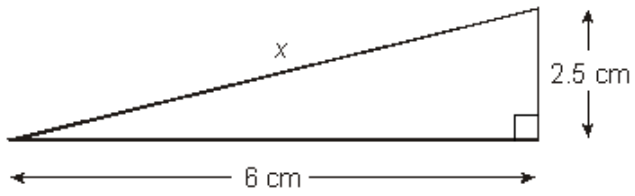
Answer ..... cm *(3 marks)*

The diagram shows a right-angled triangle.



Not drawn accurately

Calculate the length x.

.....

.....

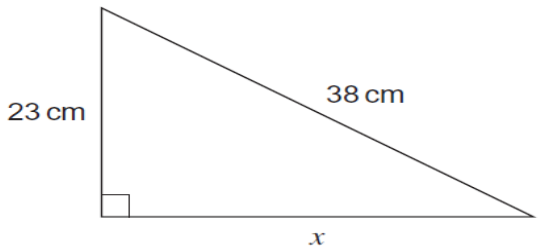
.....

.....

Answer ..... cm

(Total 3 marks)

Calculate the length x in the triangle.



Not drawn accurately

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Answer ..... cm *(3 marks)*

REVIEW		REFLECTION / EVALUATION
		**The parts of this topic where I am confident are...**
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		**Other comments/reminders...**

Probability – Exam Questions Only

A bag contains 6 red pens, 69 black pens and 25 blue pens.

(a) Write down the number of red pens as a fraction of the total number of pens in the box.
Give your answer in its simplest form.

.....

.....

Answer .....

(2)

(b) What percentage of the pens are **not** black?

.....

Answer .....%

(1)

(c) Circle a word from the list to describe the chance of each of the following events.

(i) A pen chosen at random from the box is red.

impossible unlikely evens likely certain

(1)

(ii) A pen chosen at random from the box is **not** green.

impossible unlikely evens likely certain

(1)

(Total 5 marks)

Here is a list of numbers.

5 7 5 6 4 9 8 10 5

(a) Work out the median.

.....

Answer .....

(2)

(b) One of the numbers is chosen at random.

(i) What is the probability that the number is 5?

.....

Answer .....

(1)

(ii) Put these events in order of likelihood starting with the least likely.

A The number is 5.

B The number is even.

C The number is greater than 8.

.....

.....

Answer .....

(2)

(Total 5 marks)

Ronan is designing a game.

He has two sets of discs laid face down on a table.

The first set of five discs are labelled 1, 3, 5, 7, 9.

The second set of four discs are labelled 2, 4, 6, 8.

Players turn over one disc, at random, from each set and add the numbers together.

(a) Complete the table to show **all** the possible totals.

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

(2)

(b) What is the probability of getting a total less than six?

.....

Answer .....

(1)

(c) Ronan uses the game to raise money for charity.

Each player pays 20 p to play the game.

If a player gets a total of exactly 13 they win a bar of chocolate.

It costs Ronan 50 p for each bar of chocolate.

If 100 people play the game, show that Ronan should expect to raise £12.50 for charity.

.....

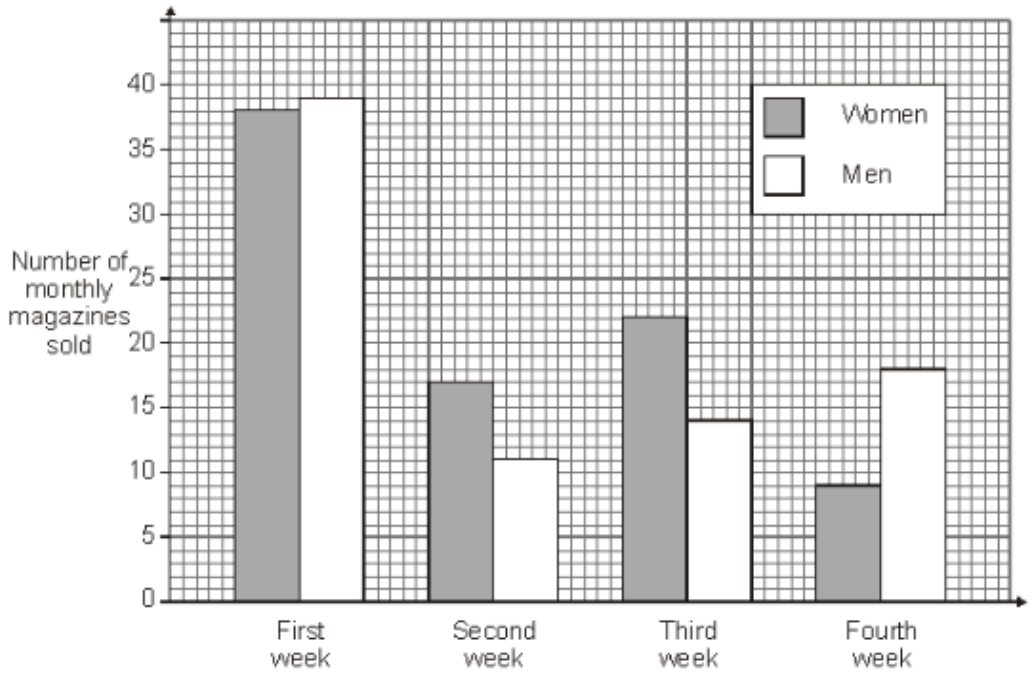
.....

REVIEW		REFLECTION / EVALUATION
		**The parts of this topic where I am confident are...**
		**The areas of this topic that I still need to revise are...**
		**Other comments/reminders...**

Representing Data (Graphs/Charts etc…) – Exam Questions Only

The dual bar chart shows the sales of monthly magazines in a newsagents.

The data is collected over one month.



(a) Give a reason why the sales of monthly magazines are greatest in the first week of the month.

.....

.....

(1)

(b) The shopkeeper thinks that more women than men buy monthly magazines.

Does the data support this?

Show working to justify your answer.

.....

.....

.....

.....

.....

.....

.....

(3)

(Total 4 marks)

The table shows the races that 60 primary school pupils entered on their Sports Day. They each entered one race.

Race entered	Number of pupils
Egg and spoon	18
3-legged	20
Sack	12
Obstacle	10

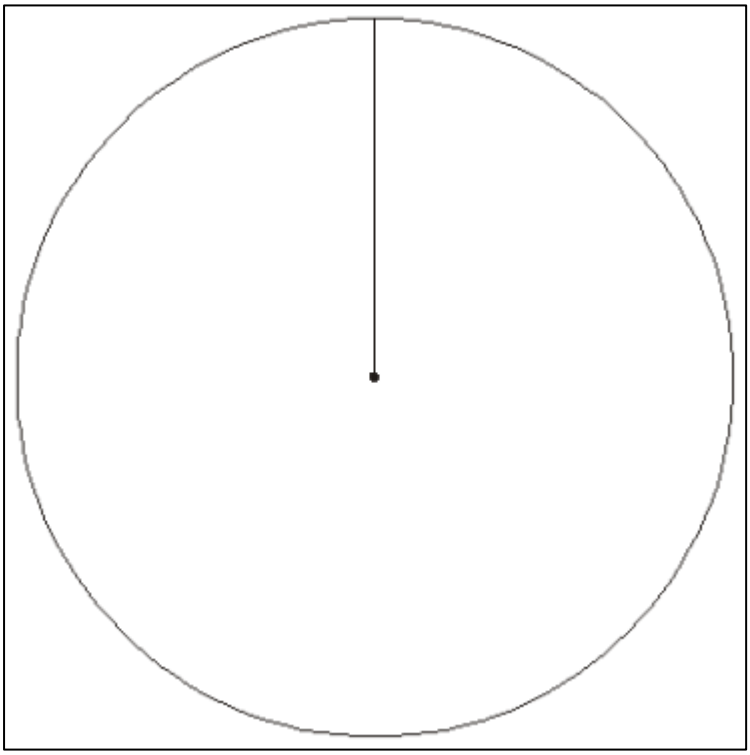
(a) Draw and label a pie chart to represent the information in the table.

.....

.....

.....

.....



(b) Work out the percentage of pupils who entered the egg and spoon race.

.....

.....

Answer .....%

(c) The pupils in the obstacle race took these times in seconds.

23 36 18 29 44 39 36 54 43 41

Draw an ordered stem and leaf diagram to show this information.

.....

.....

.....

.....

.....

Key: | 2 | 3 represents 23 seconds

.....	
.....	
.....	
.....	
.....	

(3)
(Total 9 marks)

REVIEW		REFLECTION / EVALUATION
		**The parts of this topic where I am confident are...**
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Interpreting Data – Exam Questions Only

On her way to work Janice passes through four sets of traffic lights.
She records the number of times she stops at traffic lights each day.
The table shows her results for ten weeks.

Number of stops each day	Frequency (number of days)
0	1
1	6
2	12
3	15
4	16

(a) Calculate the mean number of stops each day.

.....

.....

.....

Answer .....

(3)

(b) Janice says that she stops at every set of traffic lights on most days.
She is wrong.

Explain why she is wrong.

.....

.....

(1)

(c) On average, how many days per week does Janice work?

.....

Answer .....

(1)
(Total 5 marks)

Three whole numbers have a mean of 30.

(a) The numbers are all different.

Write down three possible numbers.

.....

Answer ..... and ..... and .....

(1)

(b) Two numbers are equal and the third number is smaller than the other two.

Find three possible numbers.

.....

Answer ..... and ..... and .....

(1)

(c) Two numbers are equal and the third number is half the size of the other two.

Work out the three numbers.

.....

.....

Answer ..... and ..... and .....

(2)

(Total 4 marks)

A survey of the adults in Oldtown is carried out to find the age at which they hope to retire.

(a) Here is one of the questions.

Question : How old are you?

Response :

Under 30 ☐

30 – 50 ☐

60+ ☐

(i) Write down **one** criticism of the question.

.....

.....

(1)

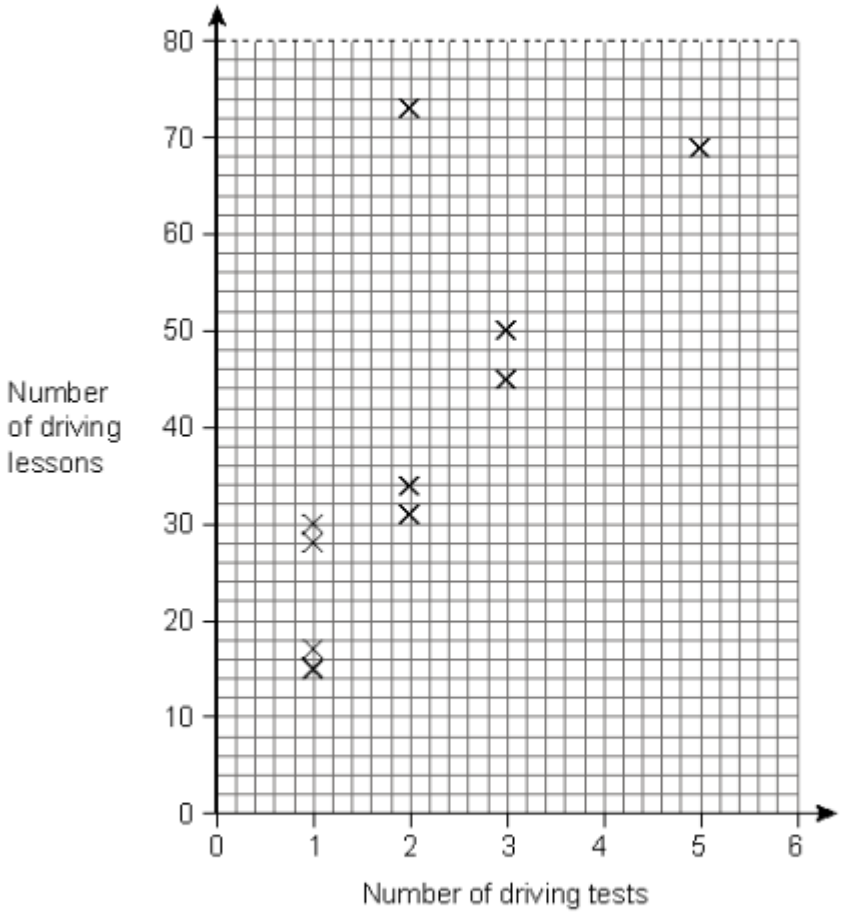
(ii) Write down **one** criticism of the response section.

.....

.....

(1)

Jeff wants to know the number of driving lessons he might need before he passes his driving test.
He also wants to know the number of times he might have to take his driving test before he passes.
He collects some data and shows it on this scatter graph.



(a) Jeff ignores one of the points on the scatter graph.

Circle this point and give a reason why it should be ignored.

Reason .....

(b) Draw a line of best fit on the scatter graph.

(1)

(c) Jeff has already failed his driving test three times after a total of 40 driving lessons.

(i) Estimate how many **more** driving lessons Jeff needs if he is to pass his driving test on the fourth attempt.

.....

Answer .....

(2)

(ii) Give a reason why this estimate might be unreliable.

.....

.....

(1)
(Total 6 marks)

A doctor wants to encourage her patients to take more exercise.

The doctor has approximately 500 patients.

She decides to do a survey about what exercise her patients take.

(a) This is a question in the survey.

Q Do you exercise?

A Tick a box

Yes ☐ No ☐ Sometimes ☐ Every day ☐

(i) Give a criticism of the question.

.....

.....

.....

(1)

(ii) Give a criticism of the response section.

.....

.....

.....

(1)

25. Caleb measured the heights of 30 plants.

The table gives some information about the heights, h cm, of the plants.

Height (h cm) of plants	Frequency		
$0 < h \leqslant 10$	2		
$10 < h \leqslant 20$	8		
$20 < h \leqslant 30$	9		
$30 < h \leqslant 40$	7		
$40 < h \leqslant 50$	4		

Work out an estimate for the mean height of a plant.

REVIEW		REFLECTION / EVALUATION
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