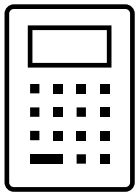
Surname:	Forename(s):

GCSE Mathematics – Foundation Tier

Paper 2 – Calculator



Practice Set A

ANSWERS

/40

Materials

- **Formulae Sheet** (on the next page)
- **Black** ink or ball-point pen
- Pencil
- Eraser
- Protractor
- Compass
- Tracing Paper
- **Calculator allowed**

Instructions

- Time allowed: **45 minutes.**
- The total mark for this paper is **40**.
- Show **all** of your working.
- Draw diagrams in pencil.
- Plot graphs in pencil.
- Diagrams are **not** accurately drawn, unless otherwise indicated.
- Cross through any work you don't want to be marked

Foundation Tier Formulae Sheet

Perimeter, Area and Volume

Where *a* and *b* are the lengths of the parallel sides and *h* Is their perpendicular separation:

Area of a trapezium = ½ (a + b) h

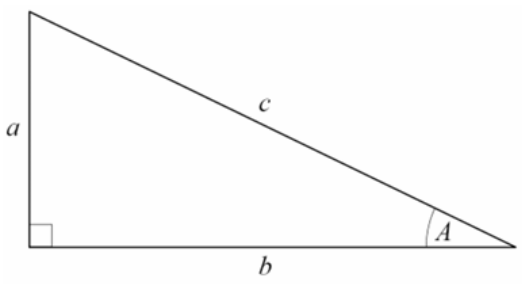
Volume of a prism = area of cross section x length

Where *r* is the radius and *d* is the diameter:

Circumference of a circle = 2πr = πd

Area of a circle = πr^2

Pythagoras' Theorem and Trigonometry



In any right-angled triangle where a, b and c are the length of the sides and c is the hypotenuse:

$$a^2 + b^2 = c^2$$

In any right-angled triangle ABC where a, b and c are the length of the sides and c is the hypotenuse:

$$\sin A = \frac{a}{c} \qquad \cos A = \frac{b}{c} \qquad \tan A = \frac{a}{b}$$

Compound Interest

Where *P* is the principal amount, *r* is the interest rate over a given period and *n* is number of times that the interest is compounded:

$$\text{Total accrued} = P\left(1 + \frac{r}{100}\right)^n$$

Probability

Where P (*A*) is the probability of outcome *A*

and P (*B*) is the probability of outcome *B*:

P (*A* or *B*) = P (*A*) + P (*B*) – P (*A* and *B*)

P (*A* and *B*) = P (*A* given *B*) P(*B*)

1 Which unit would be most suitable to use when measuring the length of a notepad?
Tick (✓) in the box next to your answer

Millimetre ☐

Centimetre ☑

Metre ☐

Kilometre ☐

(Total for question 1 is 1 mark)

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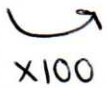
2 Write 0.46 as a percentage



46 %

(Total for question 2 is 1 mark)

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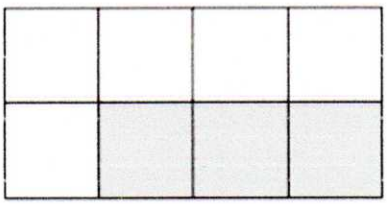
3 Here is a grid of squares.



Write the ratio of the number of grey squares to the number of white squares.

3 grey 5 white

3:5

(1)

(Total for question 3 is 1 mark)

4 **Q** is 5 more than **P**
R is 7 less than **P**

(a) Write an expression for **Q** in terms of **P**

Q = P + 5

(1)

(b) Write an expression for **R** in terms of **P**

R = P − 7

(1)

(c) Work out **Q** − **R**

(P + 5) − (P − 7)

P + 5 − P + 7

12

(2)

(Total for question 4 is 4 marks)

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5 Amy goes to the gift shop to buy 10 balloons to decorate for a party.
Here are the deals she sees.

Balloons
Single balloon - £6.25
Pack of 3 balloons - £18.25
Pack of 5 balloons - £30.75

What is the cheapest possible price for 10 balloons?

10 single balloons = 10 × £6.25 = £62.50

3 packs of 3 balloons + 1 single balloon = (3 × £18.25) + £6.25
= £61

2 packs of 5 balloons = 2 × £30.75 = £61.50

Pack of 5 + pack of 3 + 2 single balloons
↳ = £30.75 + £18.25 + 2(£6.25)
= £61.50

£ 61

(4)

(Total for question 5 is 4 marks)

6 315 people go to a safari park.
The people are either adults or children.

There are 35 adults at the safari park
85% of the children are have brought a backpack.

Work out the number of children on the trip who have **not** brought a backpack.

Children = 315 − 35 = 280

85% have a backpack, so 15% do not have a backpack

15% of 280 = 0.15 × 280 = 42

42 children

(Total for question 6 is 4 marks)

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7 A drink is made in a factory by mixing flavouring and water.

For every 1L of flavouring, add 8L of water.
Flavouring costs £0.18 per litre.
Water costs £0.05 per litre.

30L of flavouring is used to make the drink mixture.

Work out the total cost of the drink mixture.

Flavouring : Water
1 : 8
×30 ↓ ↓ ×30
30 : 240

Flavouring = 30 × £0.18 = £5.40
Water = 240 × £0.05 = £12

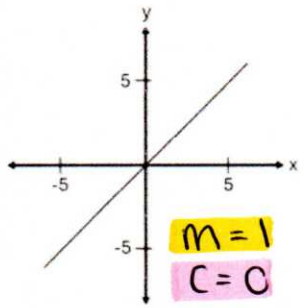
Total = 5.40 + 12 = 17.40

£ 17.40

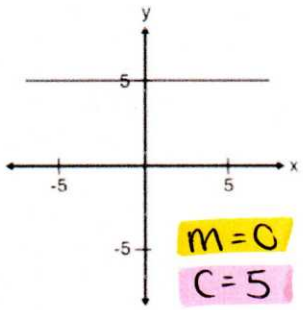
(3)

(Total for question 7 is 3 marks)

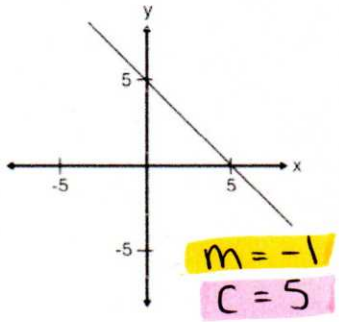
8 Here are six straight line graphs



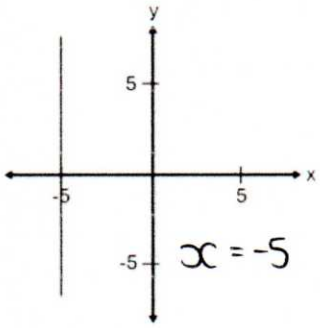
Graph A



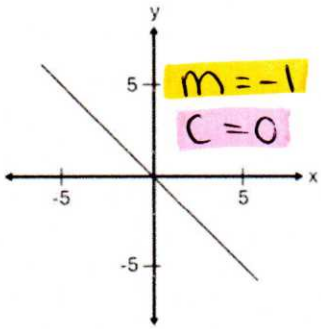
Graph B



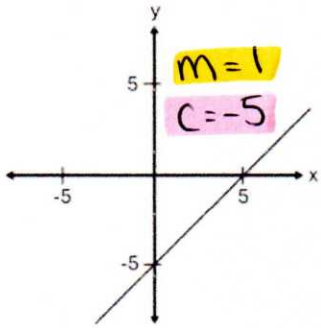
Graph C



Graph D



Graph E



Graph F

Match each equation in the table to the correct graph.

Write your answers in the table below.

$y = mx + C$

m → gradient

C → y intercept

Equation	Graph
x = -5	D
y = x	A
x + y = 5	C

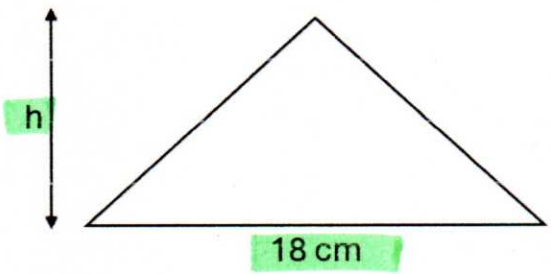
$x + y = 5$

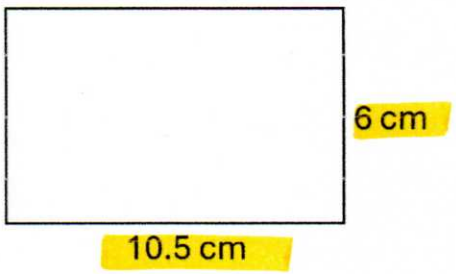
$-x$ $-x$

$y = -x + 5$

(Total for question 8 is 2 marks)

9 The triangle and rectangle have the same area.





Work out the height of the triangle.

Area △ = Area □

$\frac{b \times h}{2} = b \times h$

$\frac{18 \times h}{2} = 10.5 \times 6$

$9h = 63$

$h = 7$

7 cm

(Total for question 9 is 3 marks)

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10 Here is a list of numbers.

20 21 28 30 33 38 40 44

20, 30, 40 is a linear sequence.

(a) Use three of the numbers from the list to make a different linear sequence.

28, 33, 38

(1)

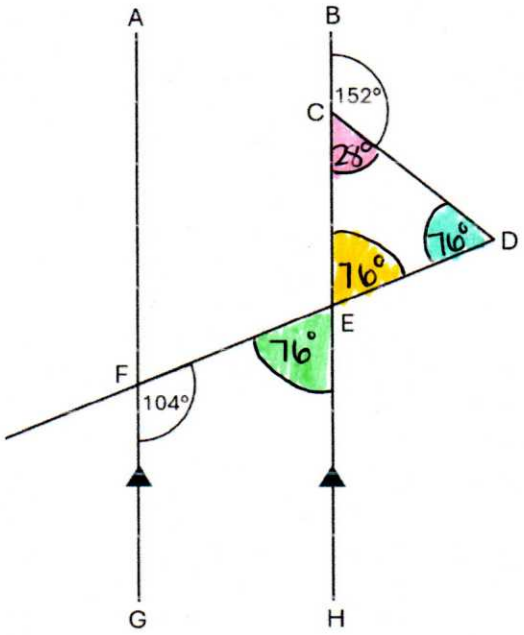
(b) Describe the rule of the sequence for your answer in part (a)

Add 5

(1)

(Total for question 10 is 2 marks)

11 AFG and BCEH are parallel lines.
DEF is a straight line.



Show that triangle CDE is an isosceles.

Give reason for each stage of your working out.

$\angle FEH = 76°$ because co-interior angles. sum to 180°.

$\angle CED = 76°$ because vertically opposite angles are equal.

$\angle DCE = 28°$ because angles on a straight line sum to 180°.

$\angle CDE = 76°$ because angles in a triangle sum to 180°

2 angles in triangle CDE are equal, therefore triangle CDE is an isosceles.

* there are lots of possible ways to come to this final conclusion.

(Total for question 11 is 5 marks)

12 (a) Complete the table of values for $y = x^2 - x - 6$

x	-3	-2	-1	0	1	2	3
y	6	0	-4	-6	-6	-4	0

(2)

(b) On the grid, plot the graph of $y = x^2 - x - 6$ for values of x from -3 to 3.

$y = (-3)^2 - (-3) - 6 = 6$

$y = (-2)^2 - (-2) - 6 = 0$

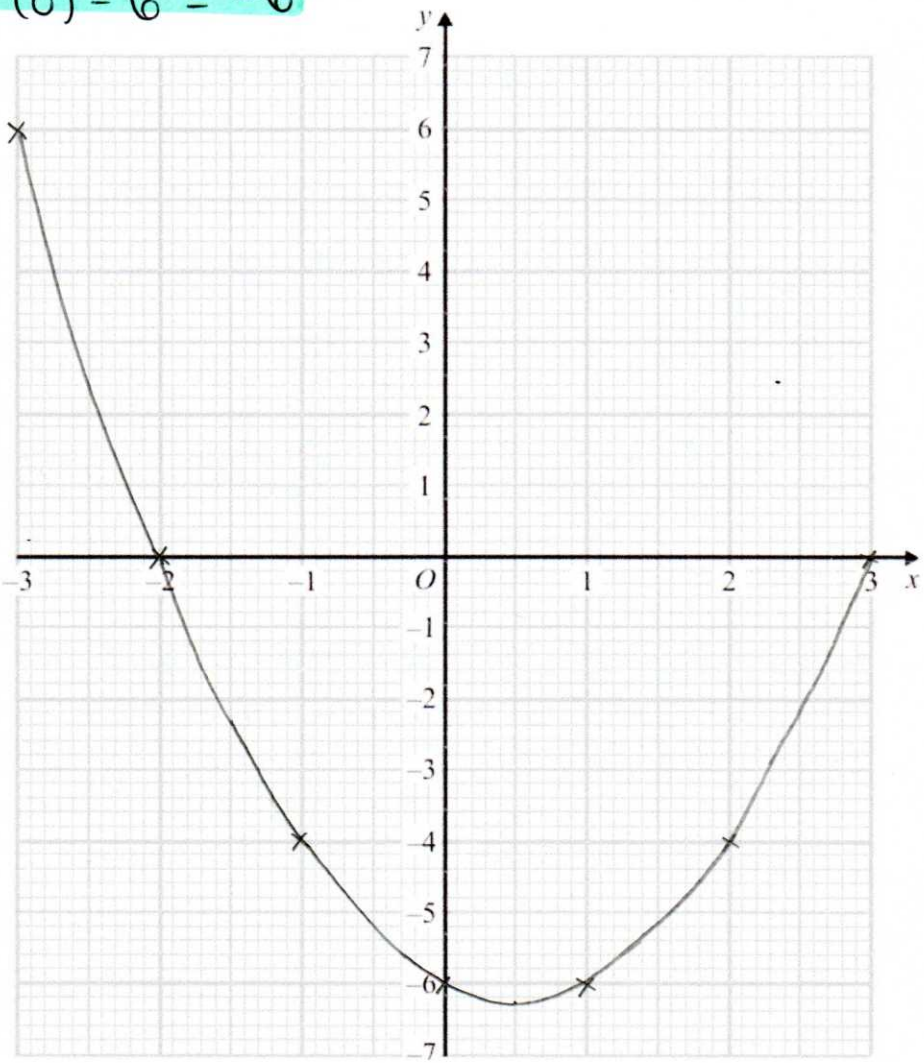
$y = (-1)^2 - (-1) - 6 = -4$

$y = (0)^2 - (0) - 6 = -6$

$y = (1)^2 - (1) - 6 = -6$

$y = (2)^2 - (2) - 6 = -4$

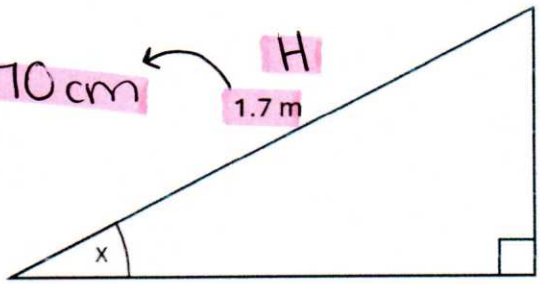
$y = (3)^2 - (3) - 6 = 0$



(2)

(Total for question 12 is 4 marks)

13 Work out the size of angle x.
Give your answer to 1 decimal place.



1.7m = 170cm
×100

H
A

SOH
CAH
TOA

$\cos x = \frac{A}{H}$

$\cos x = \frac{104}{170}$

$x = \cos^{-1}\left(\frac{104}{170}\right)$

$x = 52.28278764\ldots$

52.3 °

(Total for question 13 is 3 marks)

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14 Solve $x^2 - 3x - 28 = 0$

$x^2 - 3x - 28 = 0$

$(x + 4)(x - 7) = 0$

$x = -4$ $\quad x = 7$

Factors of 28
1, 28
2, 14
4, 7

$x = -4$ or 7

(Total for question 14 is 3 marks)

END OF TEST

TOTAL FOR THIS PAPER IS 40 MARKS

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