

General Certificate of Secondary Education

GCSE AQA Mathematics (Grade 9-1) Foundation Tier

Centre name				
Centre number				
Candidate number				

Practice Set 1 Paper 3: Calculator

Time allowed: 1 hour 30 minutes

Surname
Other names
Candidate signature

In addition to this paper you should have:

- A pen, pencil and eraser.
- A ruler.
- A protractor.
- A pair of compasses.
- A calculator.



Instructions to candidates

- Write your name and other details in the spaces provided above.
- Answer all questions in the spaces provided.
- In calculations show clearly how you worked out your answers.
- Calculators may be used — if your calculator doesn't have a π button, take the value of π to be 3.142

Information for candidates

- There are 80 marks available for this paper.
- The marks available are given in brackets at the end of each question.
- You may get marks for method, even if your answer is incorrect.

Advice to candidates

- Work steadily through the paper.
- Don't spend too long on one question.
- If you have time at the end, go back and check your answers.

For examiner's use			
Q	Mark	Q	Mark
1		14	
2		15	
3		16	
4		17	
5		18	
6		19	
7		20	
8		21	
9		22	
10		23	
11		24	
12		25	
13		26	
Total			

Answer ALL the questions.

Write your answers in the spaces provided.

You must show all of your working.

1 What is 605 pence in pounds? Circle your answer.

£0.65

£6.05

£6.50

£6.55

[Total 1 mark]

2 The table below shows part of a train timetable between Douglas and Port St Mary.

Douglas	14:30	16:00	17:45
Castletown	15:07	16:37	—
Port St Mary	15:26	16:50	18:41

(a) How long in minutes does the 14:30 train from Douglas take to get to Port St Mary?
Circle your answer.

37 minutes

46 minutes

50 minutes

56 minutes

[1]

(b) Pawel arrives at Castletown station at 14:50.
How many minutes will he have to wait before he can catch the train to Port St Mary?
Circle your answer.

17 minutes

27 minutes

57 minutes

67 minutes

[1]

[Total 2 marks]

3 Circle the inequality that is false.

$5 > 3$

$5 > -3$

$-5 < 3$

$-5 > -3$

[Total 1 mark]

4 In the number 532.89, the value of the 5 is 500. Write down:

(a) the value of the 3 in 532.89

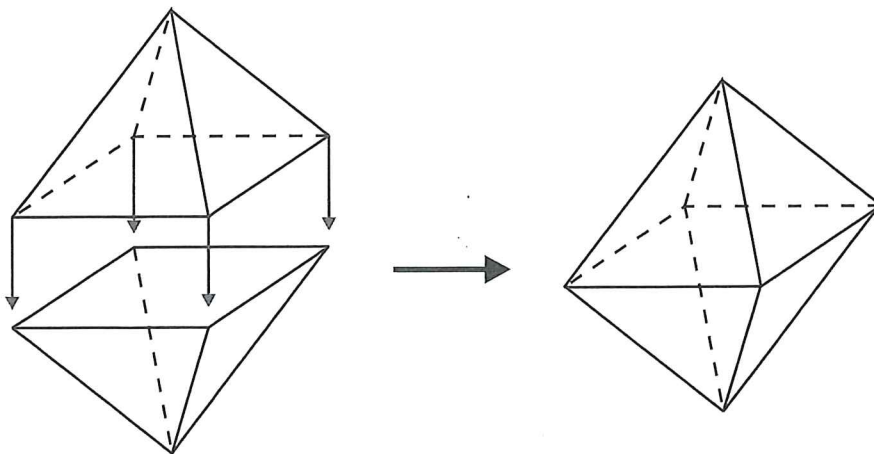
.....
[1]

(b) the value of the 8 in 532.89

.....
[1]

[Total 2 marks]

5 An octahedron can be made by joining two square-based pyramids at their bases as shown in the diagram below.



For an octahedron, write down:

(a) the number of faces,

.....
[1]

(b) the number of vertices,

.....
[1]

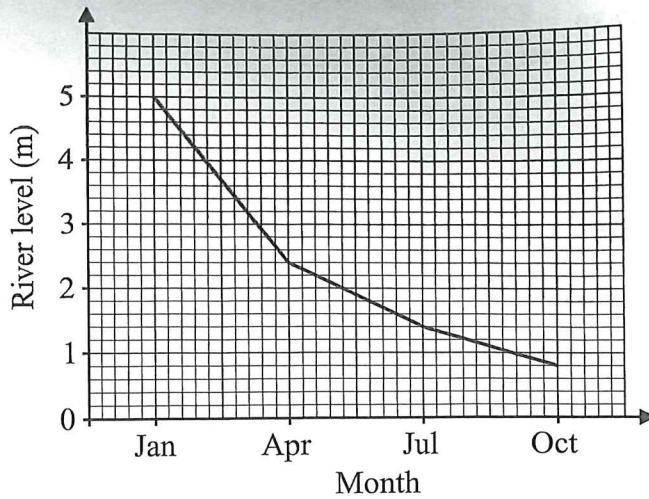
(c) the number of edges.

.....
[1]

[Total 3 marks]

Leave blank

6 This line graph shows the level of a river measured at the same location every 3 months.



(a) In which three-month period did the river level drop the least?

..... [1]

(b) How much did the river level fall between April and October?

..... m [2]

[Total 3 marks]

7 (a) Use your calculator to work out $\left(\frac{4.925}{\sqrt[3]{15.6256}}\right)^2$

Write down your entire calculator display.

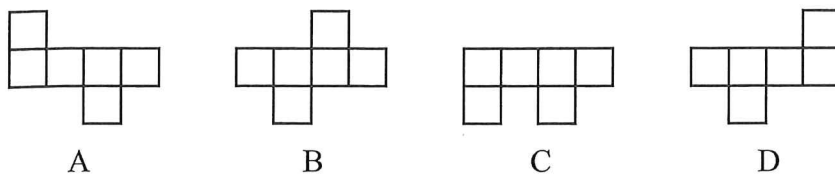
..... [2]

(b) Give your answer to part (a) to 3 decimal places.

..... [1]

[Total 3 marks]

8 The shapes below are each made from six squares of the same size. They are labelled A to D.



(a) Which two shapes are congruent? Circle your answer.

- A and B A and C A and D C and D

[1]

(b) Which one of the shapes could not be used as the net of a cube? Circle your answer.

- A B C D

[1]

[Total 2 marks]

9 Quentin is using a calculator app on his smartphone. The calculator app does not always give the correct answer because it does each part of a calculation in the order it is typed.

For the calculation $\boxed{3} \boxed{+} \boxed{5} \boxed{\times} \boxed{7} \boxed{=}$

Quentin's calculator app wrongly gives the answer as 56.

(a) Give the correct answer to the calculation and explain why Quentin's calculator app gave the wrong answer.

.....

.....

.....

.....

[2]

(b) For the calculation $\boxed{3^2} \boxed{\times} \boxed{5} \boxed{-} \boxed{7} \boxed{=}$

Explain why Quentin's calculator app will give the correct answer this time.

.....

.....

[1]

[Total 3 marks]

10 Fully simplify $b \times 2 \times 3 \times c$

Leave
blank

.....
[Total 1 mark]

11 Savannah has put the letters of her name onto cards.



She mixes them up and chooses one at random.

- (a) Work out the probability that she picks a card with the letter S on it.
Give your answer as a fraction in its simplest form.

.....
[1]

- (b) Work out the probability that she picks a card with the letter V or H on it.
Give your answer as a decimal.

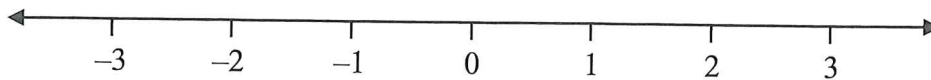
.....
[2]

- (c) Work out the probability that she picks a card that does not have the letter A on it.
Give your answer as a percentage.

..... %
[2]

[Total 5 marks]

12 (a) Show the inequality $-2 < n \leq 1$ on the number line below.



[2]

(b) If n is an integer, write down the values of n that satisfy the inequality $-2 < n \leq 1$.

.....
[1]

[Total 3 marks]

13 A tennis club has 150 members.
42% of the members of the tennis club are female.
Work out the number of members who are male.

.....
[Total 2 marks]

14 A fast food restaurant has a special offer where customers can choose one sandwich, one side and one drink for a set price.

<p>First... <u>choose one sandwich</u> Ham Tuna</p>
--

<p>... then... <u>choose one side</u> Fries Salad</p>
--

<p>... and finally <u>choose one drink</u> Cola Orange juice Milk</p>
--

One possible sandwich-side-drink combination is a ham sandwich, fries and cola, which can be written as HFC.
List all of the possible combinations in this way.

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

[Total 2 marks]

15 (a) Simplify $\frac{28a}{4}$

Leave
blank

.....
[1]

(b) Expand and simplify

(i) $5(c + 3)$

.....
[1]

(ii) $8d^2 - d(d + 4)$

.....
[2]

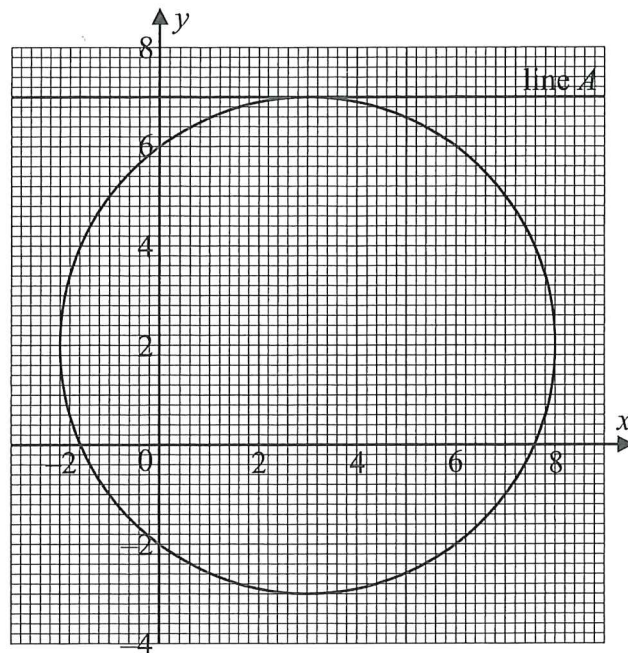
(c) Solve $8x - 10 = 2x + 14$

$x =$
[2]

[Total 6 marks]

- 16 The diagram below accurately shows a circle and line A .
The circle crosses the y -axis at $(0, 6)$ and has its centre at $(3, 2)$.

Leave
blank



- (a) Write down the coordinates of the other point where the circle crosses the y -axis.

.....
[1]

Line A touches the circle but does not cross it.

- (b) What is the name given to line A ? Circle your answer.

Tangent

Diameter

Chord

Segment

[1]

- (c) Write down the equation of line A .

.....
[1]

- (d) What is the area of the circle? Give your answer to 2 d.p.

.....
[2]

[Total 5 marks]

Leave
blank

- 17 Xavier hires a car for four days whilst on holiday in Switzerland.
The currency of Switzerland is the Swiss Franc (CHF).

The car costs 99.40 CHF per day to hire.

The car uses 0.08 litres of petrol for every kilometre it travels.

Petrol costs 1.35 CHF per litre.

Over the four days, Xavier drives a total distance of 525 km.

- (a) Work out how much Xavier spent in total on car hire and petrol.

..... CHF
[4]

- (b) The exchange rate from British Pounds to Swiss Francs is $\text{£}1 = 1.42 \text{ CHF}$.
Work out Xavier's total spend in pounds, giving your answer to the nearest pound.

£
[2]

[Total 6 marks]

18

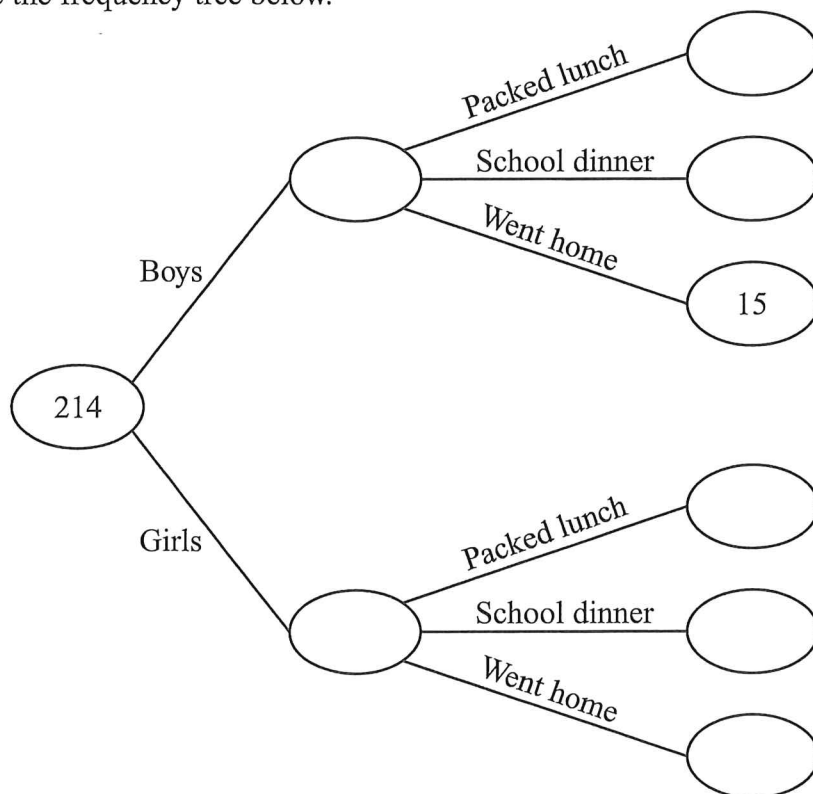
Pupils at Yarrowmere Primary School either have a packed lunch, a school dinner or go home for lunch. Yesterday, 214 pupils attended school.

Leave blank

The number of pupils who ate lunch in school yesterday is shown in this two-way table.

	Boys	Girls
Packed Lunch	33	31
School Dinner	64	62

15 of the pupils who went home for lunch were boys.
Complete the frequency tree below.



[Total 3 marks]

- 19 Calculate the reciprocal of 0.000235
Give your answer correct to three significant figures.

.....
[Total 2 marks]

20 Zac is filling a 400 litre paddling pool with water.

If he uses a hose connected to his kitchen tap, the pool takes 50 minutes to fill.
If he uses a hose connected to his outdoor tap, the pool takes 25 minutes to fill.

(a) Calculate the water flow rate, in litres per minute, of:

(i) the kitchen tap,

..... litres per minute
[1]

(ii) the outdoor tap.

..... litres per minute
[1]

The taps do not affect each other's flow rate.

(b) Use your answers to part (a) to work out how long it will take to fill the pool if he uses both taps at the same time. Give your answer in minutes and seconds.

..... minutes and seconds
[3]

[Total 5 marks]

21 The first four terms in a sequence are

5 8 13 20

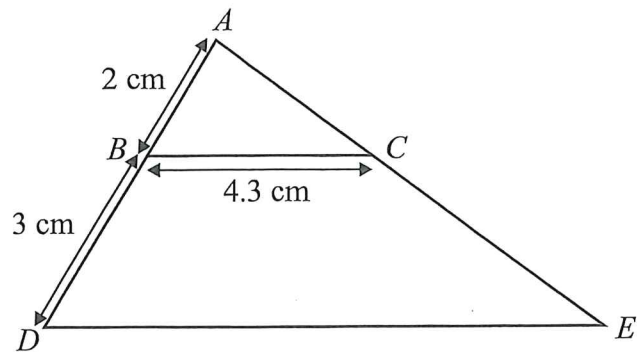
Find the next three terms in the sequence.

..... , and

[Total 2 marks]

Leave blank

- 22 The diagram below shows two similar triangles, ABC and ADE .
Triangle ADE is an enlargement of triangle ABC .
 $AB = 2$ cm, $BD = 3$ cm and $BC = 4.3$ cm.



Not drawn accurately

Work out the length of DE .

$DE = \dots\dots\dots$ cm

[Total 3 marks]

- 23 Two online music stores sell tracks to download.
One day, Vanita notices that both these stores have special offers.

<p>MUSIK XPRESS 99p per track <u>Buy two tracks and get a third free</u></p>

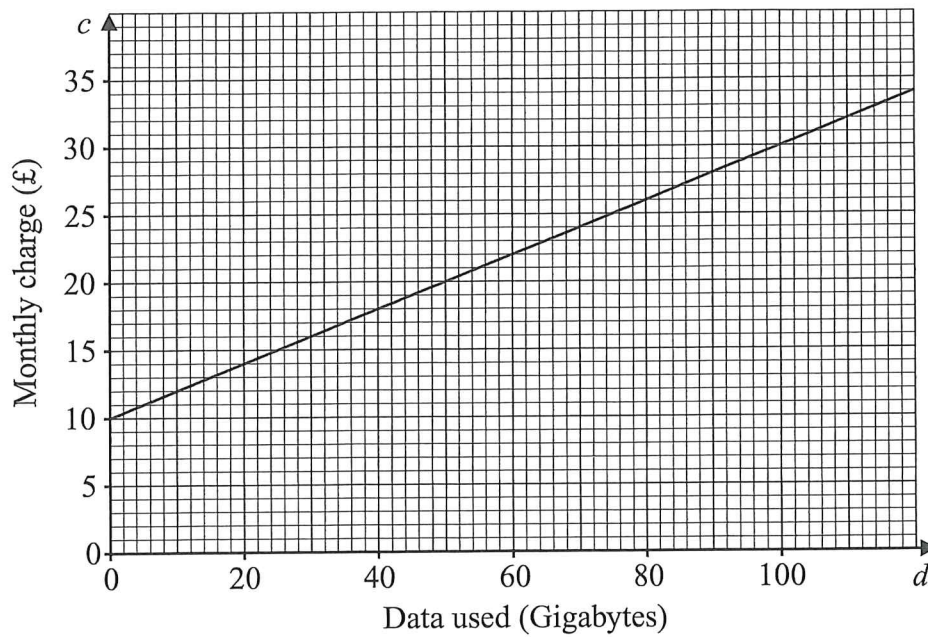
<p>SMART SOUNDS 90p per track <u>Get 30% off all purchases today!</u></p>
--

Vanita identifies 18 tracks that she wants to download.
Show clearly that Smart Sounds will be the cheaper store for Vanita to use.

[Total 4 marks]

- 24 A mobile broadband company charges customers based on how much data they use each month. The graph below can be used to work out the monthly charge.

Leave
blank



The monthly charge, c , depends on the amount of data used in gigabytes, d .

Work out a formula for c in terms of d .

.....
[Total 3 marks]

25 A table of values for $y = x^3 + 2$ is shown below.

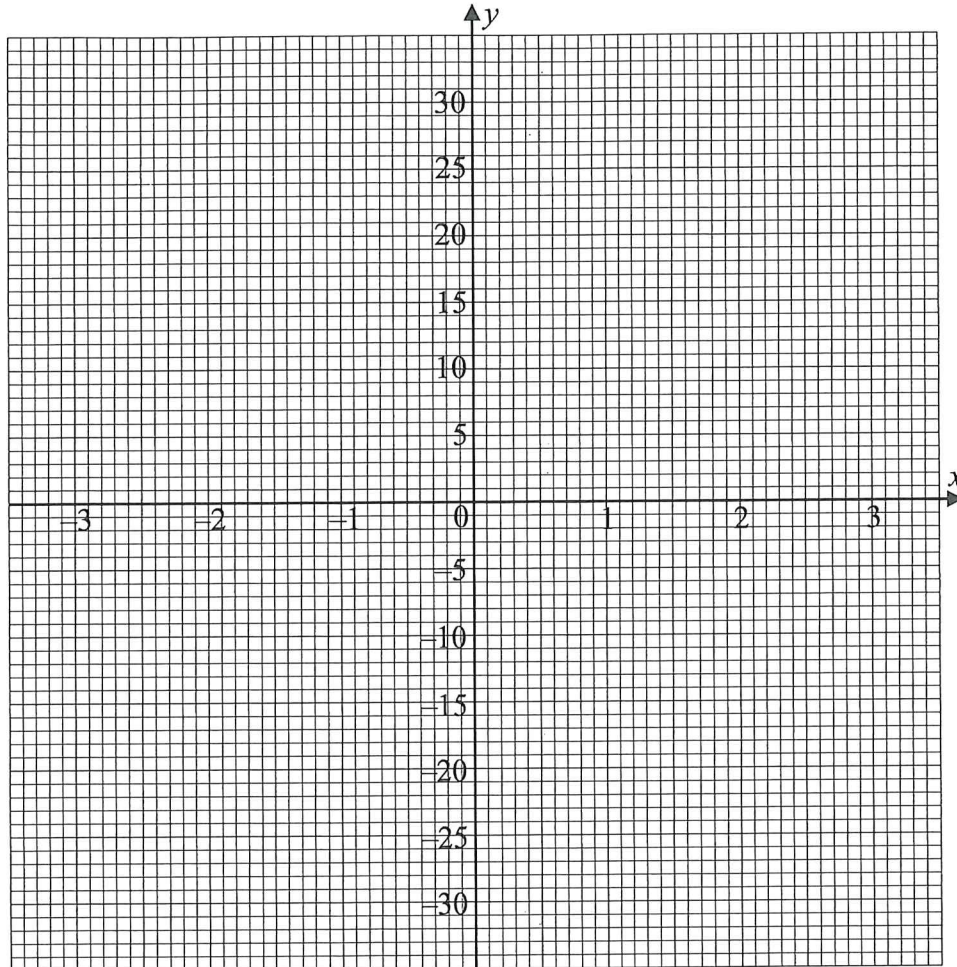
Leave blank

x	-3	-2	-1	0	1	2	3
y	-25		1	2	3	10	29

(a) Calculate the missing value in the table.

[1]

(b) Draw the graph of $y = x^3 + 2$ for $-3 \leq x \leq 3$ on the axes below.



[2]

(c) Use your graph to explain why the equation $x^3 + 2 = 0$ has exactly one solution.

.....

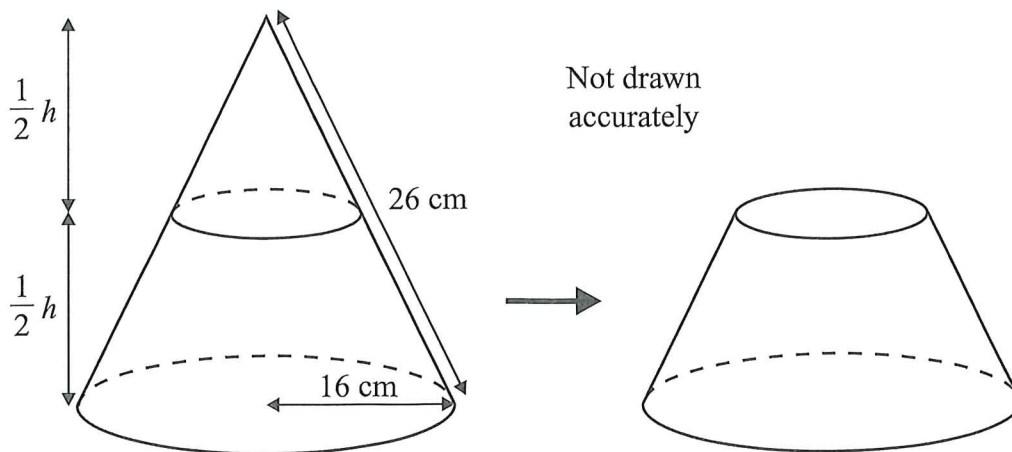
.....

[1]

[Total 4 marks]

- 26 A hollow cone with no base is cut horizontally halfway down its height h to make a lampshade.

Leave blank



The cone has a radius of 16 cm and a slant height of 26 cm.

<p>Curved surface area of cone = $\pi r l$, where r is the radius and l is the slant height of a cone.</p>
--

Calculate the surface area of the outside of the lampshade in cm^2 .
 Give your answer in terms of π .

..... cm^2

[Total 4 marks]

[TOTAL FOR PAPER = 80 MARKS]