AQA

Please write clearly in block capitals.

Centre number | | | | | | Candidate number | | | | |

Surname _____

Forename(s) _____

Candidate signature _____

I declare this is my own work.

Functional Skills Level 2 MATHEMATICS

Paper 2 Calculator

Monday 9 January 2023 Afternoon Time allowed: 1 hour 30 minutes

Materials

For this paper you must have:

- a calculator
- mathematical instruments.

For Examiner's Use	
Question	Mark
1–6	
7	
8	
9	
10	
TOTAL	

Instructions

- Use black ink or black ball-point pen. Draw diagrams in pencil.
- Answer **all** questions.
- You must answer the questions in the spaces provided. Do not write outside the box around each page or on blank pages.
- If you need extra space for your answer(s), use the lined pages at the end of this book. Write the question number against your answer(s).
- Do all rough work in this book. Cross through any work you do not want to be marked.
- State the units of your answer where appropriate.

Information

- The marks for questions are shown in brackets.
- The maximum mark for this paper is 60.
- You may ask for more answer paper, graph paper and tracing paper. These must be tagged securely to this answer book.
- If your calculator does not have a π button, take the value of π to be 3.142

Advice

In all calculations, show clearly how you work out your answer.

8362/2

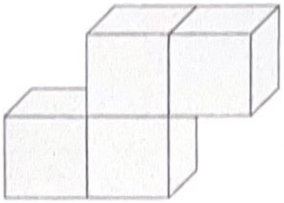
QAN 603/4258/4

Do not write outside the box

Section A

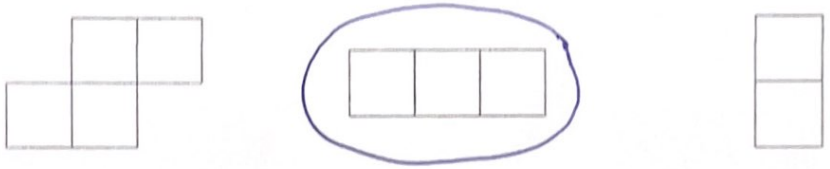
Answer **all** questions in the spaces provided.

1 Here is a solid made from four cubes.



Circle the plan view of the solid.

[1 mark]



2 Write the number 2 307 049 in words.

[1 mark]

Two million, three hundred and seven thousand and forty nine.

Do not write outside the box

3 Which is closer in value to 0.5

0.379 or 0.614 ?

You **must** show your working.

[2 marks]

$0.614 - 0.5 = 0.114$

$0.5 - 0.379 = 0.121$

$0.114 < 0.121$ so 0.614 is closer in value to 0.5

Answer 0.614

4

Surface area of a sphere = $4\pi r^2$

Work out the surface area of a sphere with a radius of 2.3 cm
State the units of your answer.

[3 marks]

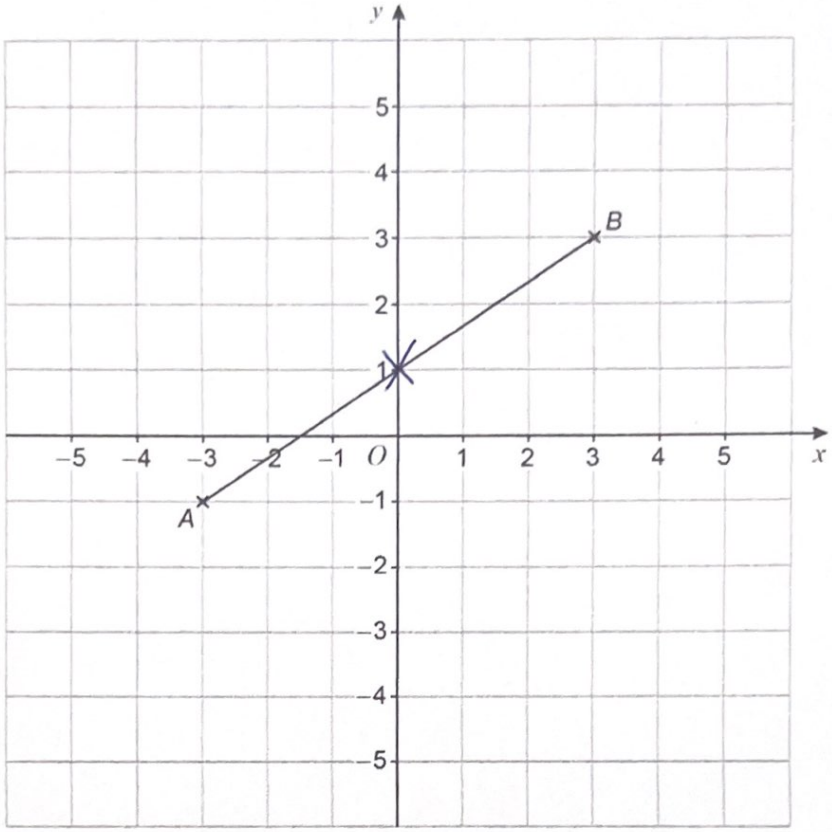
$4 \times \pi \times 2.3^2 = 4 \times \pi \times 2.3 \times 2.3$

$= 21.16\pi$

$= 66.48$

Answer 21.16π or $66.48\ cm^2$

5



Point *C* is the midpoint of line *AB*.

Plot point *C* on the grid and write down the coordinates of *C*.

[2 marks]

see graph

Answer (0 , 1)

Do not write outside the box

6 The table contains grouped data.

x	Frequency	Mid-point	
$0 < x \leqslant 20$	7	10	70
$20 < x \leqslant 40$	9	30	270
$40 < x \leqslant 50$	4	45	180
	Total = 20		520

Work out an estimate of the mean of x.

[3 marks]

See table

$7 \times 10 = 70$

$9 \times 30 = 270$

$4 \times 45 = 180$

$70 + 270 + 180 = 520$

$520 \div 20 = 26$

Answer 26

12

Turn over for Section B

Do not write outside the box

Section B

Answer **all** questions in the spaces provided.

7 **School office**

Ashley works in a school office.

7 (a) Ashley needs 29 book bags.

He sees these offers online.

Best book bags	**Bags and stuff**
Book bags £4.99 each For every 7 you buy you get an extra 1 free Free delivery	Book bags reduced to £4.25 each Delivery charge £3.90 per order

Ashley wants the cheapest total price for the 29 bags and delivery.

Which offer should he choose?
You **must** show your working.

[5 marks]

Best Book Bags

29 ÷ (7+1) = 3.625 (3 free)

29 - 3 = 26 26 x 4.99 = 129.74

Bags and stuff

29 x 4.25 + 3.9 = 127.15

127.15 < 129.74

so should choose Bags and Stuff.

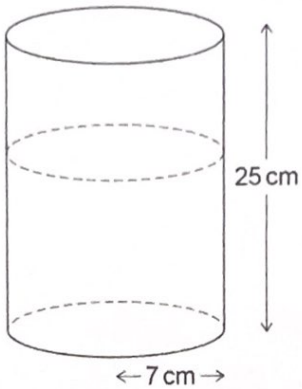
Do not write outside the box

7 (b) Ashley needs to put drinking water into 40 jugs before break time.

Each jug

is a cylinder with radius 7 cm and height 25 cm

will be $\frac{3}{5}$ full.



Water flows out of the tap at 13 litres per minute.

$1000\,cm^3 = 1$ litre

Can Ashley put the right amount of water into all 40 jugs in 6 minutes?
You **must** show your working.

[6 marks]

Volume $= \pi r^2 L = \pi \times 7 \times 7 \times 25$

$= 1225\pi$

$3/5 \times 1225\pi = 735\pi = 2309.1$

$40 \times 2309.1 \div 1000 = 92.36...$ how many litres she needs to fill

$13 \times 6 = 78$ Litres per minute $< 92.36...$

No she does not have time

11

Do not write outside the box

8 Lifeguard

Talia is a lifeguard at a swimming pool.

8 (a) One morning, Talia checked the water temperature in the pool each hour.

Time	8 am	9 am	10 am	11 am
Temperature in °F	75	80	81	87

The formula to convert Fahrenheit (F) into Celsius (C) is

$$C = \frac{5}{9}(F - 32)$$

What time was the first check where the water temperature was above 26°C?
You **must** show your working.

[3 marks]

8am $C = \frac{5}{9}(75 - 32) = \frac{5}{9}(43) = 23.888\ldots < 26$

9am $C = \frac{5}{9}(80 - 32) = \frac{5}{9}(48) = 26.66\ldots > 26$

Answer 9am

Do not write outside the box

8 (b) There are 90 people in the pool.

number of adults : number of children = 3 : 2

One lifeguard is needed for every 10 children.

How many lifeguards are needed for the children in the pool?

[4 marks]

$90 \div (3+2) = 18$

$18 \times 2 = 36$ children present

$36 \div 10 = 3.6$

so 4 lifeguards are needed

Answer 4

7

Turn over for the next question

Do not write outside the box

9 Hedgehogs

Aahad works for a charity that rescues hedgehogs.

9 (a) The charity has four main costs each month.

	Cost per month
Straw	£25
Feed	£39
Electricity	£68
Vets	£235

From next month the costs are changing.

- Straw will be free from a local farm
- Feed is increasing by $\frac{1}{6}$
- Electricity is increasing by £324 a year
- The cost of the vets will be £3090 a year.

The charity receives a new monthly donation of £30

Is the new donation enough to pay for the **increase** in total monthly costs?
You **must** show your working.

[5 marks]

feed $39 \times \frac{1}{6} = 6.5$ increase

electricity $324 \div 12 = 27$ increase

vets $3090 \div 12 - 235 = 22.5$ increase

straw 25 decrease

$6.5 + 27 + 22.5 - 25 = 31 > 30$

no the extra donation won't cover the increase in ~~bills~~. monthly costs.

Do not write outside the box

9 (b) The charity needs a new building for the hedgehogs.

The new building will cost £250 000

The charity invested £245 000 in a bank account 2 years ago.

The account pays 1.2% compound interest each year.

Is there enough money in the bank account to pay for the building?
You **must** show your working.

[3 marks]

1.2% 1.012 multiplier

$245000 \times 1.012^2 = 250\,915.28$

so yes there is enough money in the account to pay for the building.

Question 9 continues on the next page

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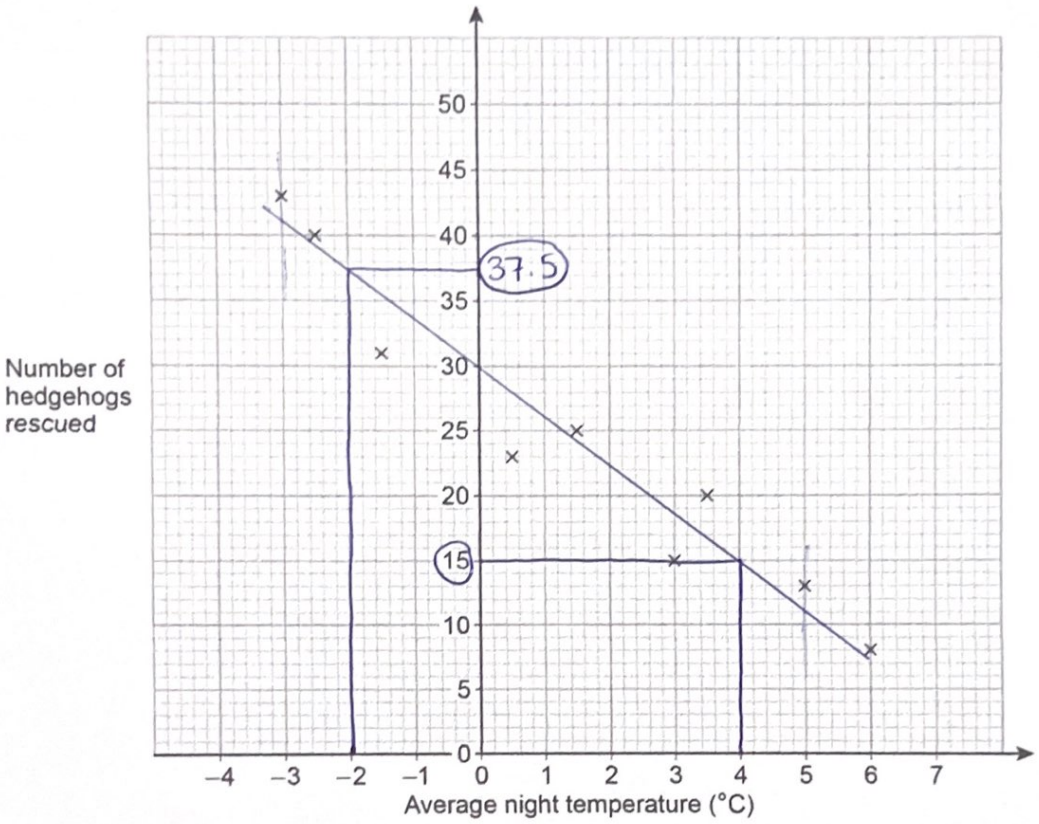
Each week Aahad records the number of hedgehogs rescued and the average night temperature that week.

The scatter diagram shows information for the last 9 weeks.



9 (c) Describe the relationship between average night temperature and number of hedgehogs rescued.

[1 mark]

As temperature increases the number of hedgehogs rescued decreases

Do not write outside the box

9 (d) In week A the average night temperature was –2°C

In week B the average night temperature was 4°C

Use the scatter diagram to estimate how many **more** hedgehogs were rescued in week A than in week B.

You **must** show your working, some of which should be on the diagram.

[4 marks]

-2°C 37.5 on average

4°C 15 on average

37.5 - 15 = 22.5

dependent on your line of best fit.

Answer 22.5

13

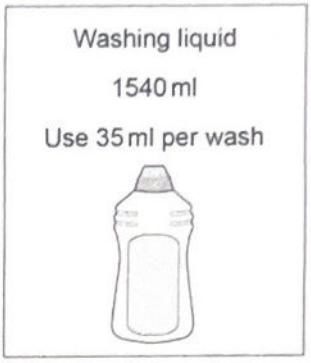
Turn over for the next question

Do not write outside the box

10 **Housework**

David is doing housework.

10 (a) David is washing clothes.



David says,

"I can do **at least** 32% more washes with the powder than the liquid."

Is he correct?
You **must** show your working.

[5 marks]

WP: $3900 \div 65 = 60$ washes

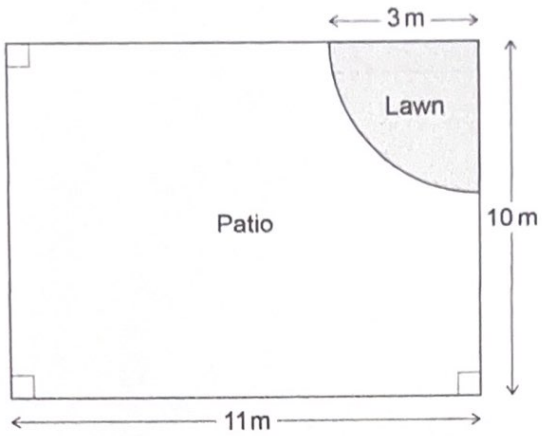
WL: $1540 \div 35 = 44$ washes

$\frac{60 - 44}{44} \times 100 = 36\ \%$

$36\ \% > 32\ \%$ so David is right.

Do not write outside the box

10 (b) David is going to clean the patio.



Not drawn accurately

The lawn is a quarter circle with radius 3 m

Each bottle of cleaner

cleans 15 m^2 of patio

costs £1.95

Work out the cost of the bottles of cleaner that David needs to clean the patio.
You **must** show your working.

[6 marks]

$11 \times 10 = 110\ m^2$ total area

$\frac{1}{4} \pi \times 3^2 = \frac{9}{4} \pi\ m^2$ area of a lawn

$110 - \frac{9}{4} \pi = 102.93\ m^2$ area of patio

$102.93 \div 15 = 6.86$ need 7 bottles

$7 \times 1.95 = 13.65$

Answer £ 13.65

Question 10 continues on the next page

Do not write outside the box

10 (c) David makes a cleaning spray using vinegar and water.

The cleaning spray needs to be

700 ml in total

45% vinegar.

David has put **half a pint** of vinegar in the spray bottle.

How much **more** vinegar and how much water does he need to add?
Use 1 pint = 568 ml
State the units of your answers.

[6 marks]

0.45 x 700 = 315 ml of vinegar

0.5 x 568 = 284 ml of vinegar already in

315 - 284 = 31 ml more vinegar

700 - 315 = 385 ml of water

Vinegar 31

Water 385

17

END OF QUESTIONS

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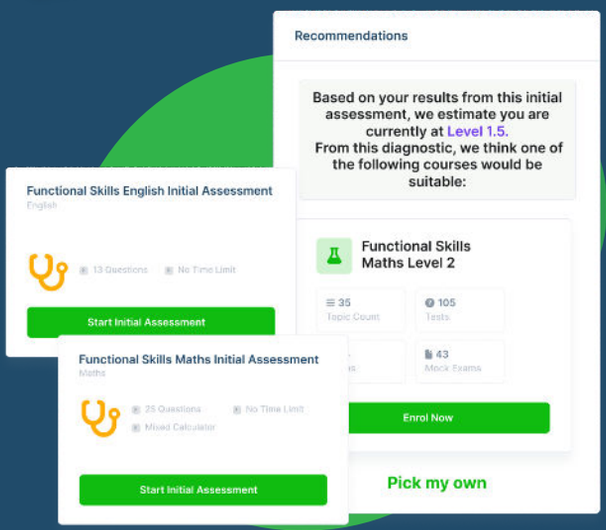

- Your answers are analysed to determine your Current Level
- Suggested courses for you to enrol on based on your calculated level
- Always know the level you are currently working at
- Determine when you are ready to sit your exam

- Explainer videos on every topic
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- Test your knowledge with exam-style questions
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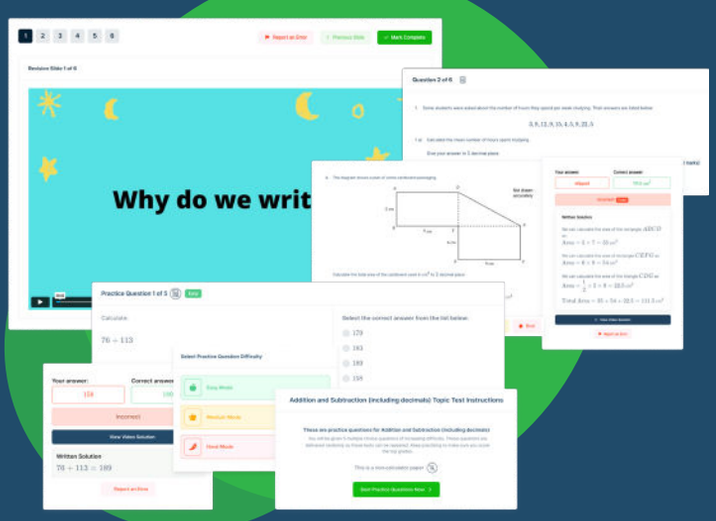

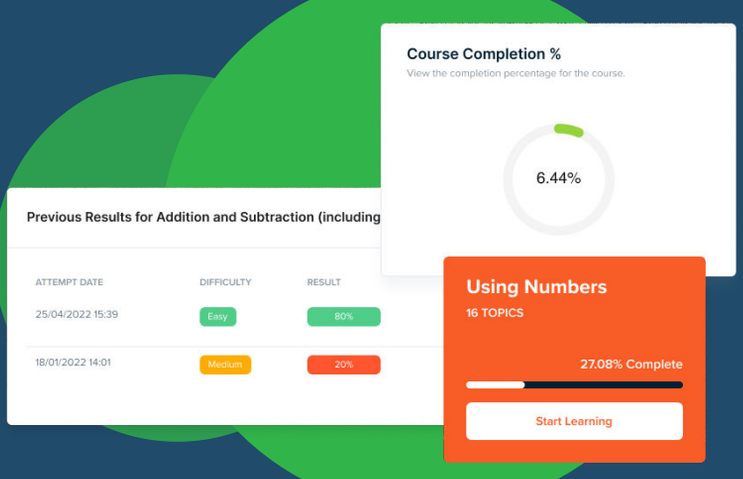

- See your progress through as you progress through each topic area
- Get your average scores for practice questions, topic tests and mock exams
- View all practice question, topic test and mock exam attempts over time
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