

Please check the examination details below before entering your candidate information

Candidate surname

Other names

**Pearson Edexcel
Functional Skills**

Centre Number

Candidate Number

*****Past Paper 5*****

Time: 1 hour 30 minutes

Paper Reference **PMAT2/C05**

Mathematics

Level 2

Section B (Calculator)



You must have:

Pen, HB pencil, eraser, ruler graduated in cm and mm, protractor, pair of compasses. Tracing paper may be used.

Total Marks

My signature confirms that I will not discuss the content of the test with anyone.

Signature: _____

Instructions

- Use **black** ink or ball-point pen.
- **Fill in the boxes** at the top of this page with your name, centre number and candidate number.
- Sign the declaration.
- Answer **all** questions.
- Write your final answers in the boxes provided.
- Answer the questions in the spaces provided – *there may be more space than you need.*
- You **must** show clearly how you get your answers in the spaces provided. Marks will be awarded for your working out.
- Check your working and answers at each stage.
- Diagrams are **not** accurately drawn, unless otherwise indicated.
- **Calculators may be used.**
- If your calculator does not have a π button take the value of π to be 3.14

Information

- The total mark for this section is 48.
- The total mark for this paper is 64.
- The marks for **each** question are shown in brackets
– *use this as a guide as to how much time to spend on each question.*
- This sign ☒ shows where marks will be awarded for showing your checks.

Advice

- Read each question carefully before you start to answer it.
- Check your answers if you have time at the end.

Turn over ►

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.CG Maths.
Worked Solutions


Pearson

Please note that these worked solutions have neither been provided nor approved by Pearson Education and may not necessarily constitute the only possible solutions. Please refer to the original mark schemes for full guidance.

Any writing in blue should be written in the exam.

Anything written in green in a rectangle doesn't have to be written in the exam.

If you find any mistakes or have any requests or suggestions, please send an email to curtis@cgmaths.co.uk

SECTION B

Answer ALL questions. Write your answers in the spaces provided.

1 Here is a set of data.

15 10 16 8 14 0 13 8 15 8

(a) Find the median.

(2)

0, 8, 8, 8, 10, 13, 14, 15, 15, 16

Putting the numbers in order from smallest to largest. Then underlining from both ends until there are two numbers in the middle

$10 + 13$

$23 \div 2$

Doing the mean of the 10 and 13 in the middle to work out what is halfway between them. Adding them together then dividing by 2 does this

11.5

(b) Find the mode.

(1)

8 appears the most as it appears 3 times and no other number appears as much as this

8

(Total for Question 1 is 3 marks)

- 2 Last year Jim bought 15 prizes for work.
The prizes cost £27 each.

This year Jim will buy 18 prizes.

He will spend the same total amount of money as he spent last year on the prizes.

Each of the 18 prizes must cost the same amount of money.

Work out the cost of each prize this year.

(3)

$$27 \times 15$$

Multiplying the £27 by the 15 prizes works out that the total amount of money he spent last year on the prizes is £405

$$405 \div 18$$

He spends the same total this year. Dividing the £405 by the 18 prizes works out the cost of each prize this year

£22.5 should be written as £22.50

£

22.50

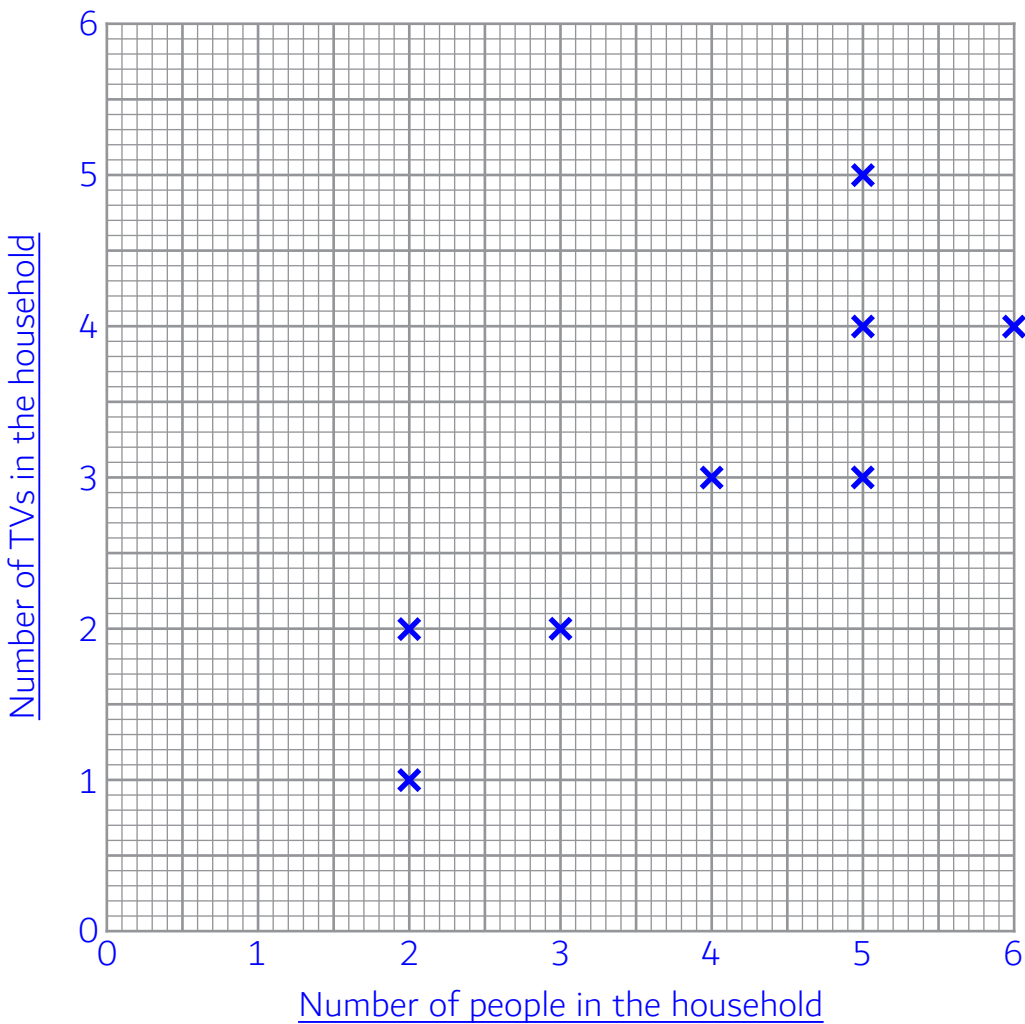
(Total for Question 2 is 3 marks)

3 Steve is writing a report about TV viewing.
He has the following information.

Number of people in the household	3	5	5	6	5	2	4	2
Number of TVs in the household	2	3	4	4	5	1	3	2

Steve thinks there is a relationship between the number of people and the number of TVs in a household.

(a) Draw a suitable diagram for Steve. (3)



Drawing a scatter graph

(b) Describe the relationship between the number of people and the number of TVs in a household. (1)

Positive correlation ← As both variables generally increase together

(Total for Question 3 is 4 marks)

- 4 Karen invests £2 500 for 3 years.

The investment earns 1.7% compound interest per year.

Work out the value of the investment at the end of 3 years.

(3)

$$\frac{100 + 1.7}{100}$$

Adding the 1.7% to 100% expresses the percentage it increases to each year. Putting this over 100 converts it to a decimal multiplier, 1.017

$$2500 \times 1.017^3$$

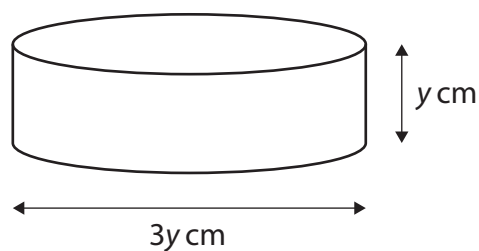
Multiplying the £2500 by 1.017 increases it by 1.7%. Raising the multiplier to the power of 3 as it needs to be increased by 1.7% 3 times

Rounding the answer to the nearest penny

£ 2629.68

(Total for Question 4 is 3 marks)

5 Here is a cylinder.



(a) Using $y = 11$, calculate the area of the curved surface of the cylinder.

(4)

3×11 ← This works out that $3y$ is 33 cm

$\pi \times 33 \times 11$ ← The curved surface can be treated like a curved rectangle. Area of rectangle = base $\times$ height. The base is the circumference of the circle and the height is 11 cm . Circumference = $\pi \times$ diameter. The 33 cm is the diameter. 11 cm is the height

$363\pi \text{ cm}^2$

The trapezium has one line of symmetry.



(1)

- This works out the perimeter in mm. Perimeter is all of the outside sides added together. The units of all the sides need to be the same

7

6

(a) Write 45% as a fraction in its simplest form.

(1)

Percentage is out of 100. So putting 45/100 into the calculator and getting it to simplify the fraction

9

20

(b) Calculate $\frac{5 + 13^2}{11 - 9.5}$

(2)

Typing it into the calculator exactly as it is above gives the answer

116

(Total for Question 6 is 3 marks)

- 7 Kate is making biscuits.
She uses flour, butter and sugar in the ratio 5:3:2

Kate has

- 800 g flour
- 550 g butter.

Kate wants to make the maximum number of biscuits possible.
She works out how much sugar she needs.

- (a) How much sugar does Kate need?

You **must** show your working.

(3)

$$800 \div 5$$

The 800 g of flour is represented by 5 parts of the ratio. So dividing the 800 g by 5 works out that 1 part of the ratio would be worth 160 g, assuming that all of the flour is used

$$160 \times 2 = 320$$

Multiplying the value of 1 part of the ratio by the 2 parts which represent the sugar works out that there would be 320 g of sugar, assuming that all the flour is used

$$550 \div 3$$

The 550 g of butter is represented by 3 parts of the ratio. So dividing the 550 g by 3 works out that 1 part of the ratio would be worth 183.3 g, assuming that all of the butter is used

$$183.\dot{3} \times 2 = 366.\dot{6}$$

Multiplying the value of 1 part of the ratio by the 2 parts which represent the sugar works out that there would be 366.6 g of sugar, assuming that all the butter is used

320 g is the most sugar which can be used as this is less than the 366.6. The flour is the limiting factor

320

g



- (b) Use a reverse calculation to show a check of your working.

(1)

$$320 \div 2$$

$$160 \times 5 = 800$$

Doing the opposite calculations in the opposite order takes it back to the 800 g of flour

(Total for Question 7 is 4 marks)

8 Lou wants to go to a gym.

She sees these two offers at the gym.

Offer A

Gym membership
£44 per month + £30 joining fee
All classes included

Offer B

Pay as you go
£7.75 per class
No joining fee

Lou wants to attend 2 classes each week for one year.

Lou thinks if she uses offer A she will save at least 28% on the total cost of classes compared to using offer B.

Is she correct?

Show why you think this.

(6)

$$7.75 \times 2 \times 52 = 806$$

Multiplying the £7.75 by the 2 classes each week expresses the cost of classes each week for offer B. Multiplying this by 52 as there are 52 weeks in a year works out that offer B would cost £806 for one year

$$806 \div 100$$

Dividing the cost of offer B for one year by 100 works out that 1% is £8.06

$$8.06 \times 28$$

Multiplying the value of 1% by 28 works out that 28% is £225.68

$$806 - 225.68 = 580.32$$

Subtracting the value of 28% from the cost of offer B for one year works out that saving 28% on the total cost of classes using offer B would be £580.32

$$44 \times 12$$

Multiplying the £44 by the 12 months in one year works out that the total of the monthly costs for offer A is £528

$$528 + 30 = 558$$

Adding the £30 joining fee to the total of the monthly costs for offer A works out that offer A would cost £558 for one year

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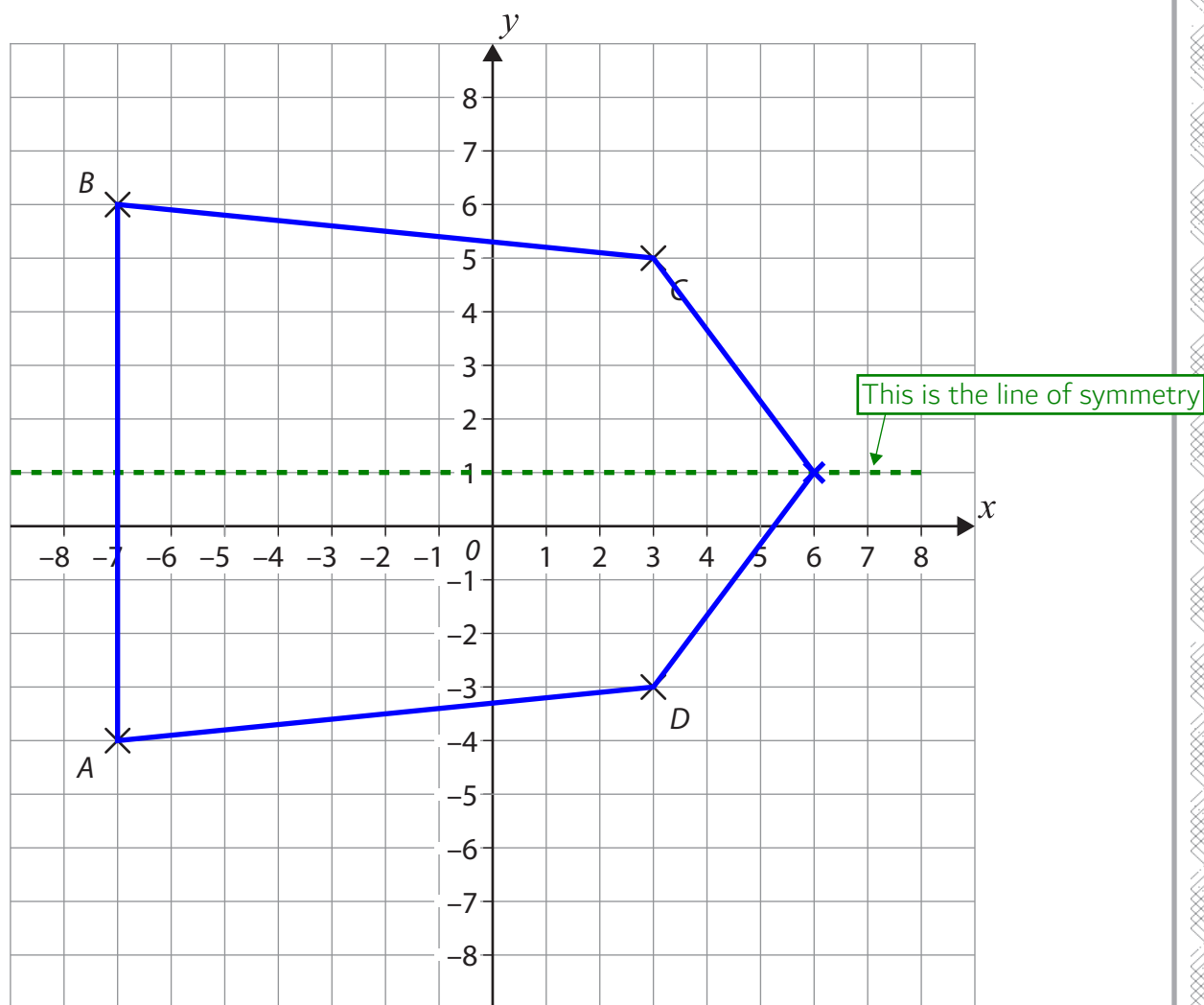
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The cost of offer A for one year is less than the cost of offer B for one year when reduced by 28%. So the savings are at least 28%

Yes

(Total for Question 8 is 6 marks)

9 Here is a grid with points A, B, C and D plotted.



(a) Write down the coordinates of point A.

(1)

x-coordinate	y-coordinate
(-7 , -4)	

(b) On the grid, mark with a cross another point and join all five points to form a pentagon with one line of symmetry.

(2)

(Total for Question 9 is 3 marks)

- 10** Rav provides food for events.
Last year 550 people attended an event.
This year there will be 748 people attending the event.

Calculate the percentage increase in the number of people attending.

(3)

$$\frac{748 - 550}{550} \times 100$$

Subtracting the 550 from the 748 expresses the increase in the number of people. Putting this over the original 550 expresses the increases as a fraction. Multiplying this by 100 converts it into a percentage

36

%

(Total for Question 10 is 3 marks)

11 Meg has a dog.

She has this information about dog food.

Dog size	Daily quantity of dog food in packs
Small (up to 12 kg)	$\frac{1}{4}$ to $1\frac{1}{3}$
Medium (13 kg to 25 kg)	$1\frac{1}{3}$ to $2\frac{1}{3}$
Large (26 kg to 45 kg)	$2\frac{1}{3}$ to $3\frac{3}{4}$
Giant (46 kg to 70 kg)	$3\frac{3}{4}$ to 5

13.1... kg is in this category

Meg knows that her dog weighs 29 lbs.

$$1 \text{ kg} = 2.2 \text{ lbs}$$

Meg has 24 packs of dog food.

- (a) What is the maximum number of days she can feed her dog with the 24 packs?
Show why you think this.

(3)

$29 \div 2.2 = 13.1...$ ← Every 2.2 lbs is 1 kg. So dividing the 29 lbs by 2.2 converts it into 13.1... kg

$24 \div 1\frac{1}{3}$ ← Dividing the 24 packs by the least daily quantity in packs for a dog of weight 13.1... kg works out the maximum number of days

18 days

Meg needs to replace part of her garden fence to keep her dog safe.
She needs to replace 78 feet of fencing.

Meg buys fencing measured in metres.

Meg uses 1 metre is 3.28 feet.

(b) Work out how many metres of fencing Meg needs.

(2)

$78 \div 3.28$ ← Every 3.28 feet is 1 metre. So dividing the 78 feet by 3.28 converts it into metres

23.8

metres

(Total for Question 11 is 5 marks)

12 Ria works in a factory making solid steel spheres.

She has this information about the number of spheres made each day for the last 100 days.

Number of spheres	Number of days
210 to 212	4
213 to 215	32
216 to 218	53
219 to 221	11

Ria will use this information to estimate the mean number of spheres made each day.

She knows that the volume, v , of a sphere is

$$v = \frac{4\pi r^3}{3}$$

r is the radius of the sphere

Each sphere has a diameter of 15 mm.

Calculate the mean volume of steel used each day to make spheres.
Give your answer to the nearest thousand.

(6)

Number of spheres	Number of days		
210 to 212	4	211	844
213 to 215	32	214	6848
216 to 218	53	217	11501
219 to 221	11	220	2420
			21613 ÷ 100

- A: The midpoint of each category. This is the best estimate to use for the number of sphere in each category.

B: Multiplying the number of days by the midpoint of each category works out an estimate of the total number of spheres for each category.

C: Adding all of the estimated totals gives an overall estimated total number of spheres of 21613. Dividing this by the 100 days estimates that the mean number of spheres made each day is 216.13

15 ÷ 2

The radius is half of the diameter so is 7.5 mm

$\frac{4\pi \times 7.5^3}{3}$

Substituting the radius of 7.5 mm for r in the formula for the volume of a sphere

1767.1... × 216.13

Multiplying the volume of 1 sphere by the estimated mean of 216.13 spheres each day estimates the mean volume of steel used each day to make spheres

381933.2... is rounded to the nearest thousand

382000

mm³

(Total for Question 12 is 6 marks)

TOTAL FOR SECTION B IS 48 MARKS
TOTAL FOR PAPER IS 64 MARKS