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Pearson Edexcel
Level 1/Level 2 GCSE (9 - 1)

Centre Number | | | | | |

Candidate Number | | | | |

Mathematics

Paper 2 (Calculator)

Foundation Tier

Specimen Papers Set 1	Paper Reference
Time: 1 hour 30 minutes	**1MA1/2F**

You must have: Ruler graduated in centimetres and millimetres, protractor, pair of compasses, pen, HB pencil, eraser, calculator.

Total Marks

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.
- Answer **all** questions.
- Answer the questions in the spaces provided
  – *there may be more space than you need.*
- **Calculators may be used.**
- If your calculator does not have a π button, take the value of π to be 3.142 unless the question instructs otherwise.
- Diagrams are **NOT** accurately drawn, unless otherwise indicated.
- You must **show all your working out**.

Information

- The total mark for this paper is 80
- The marks for **each** question are shown in brackets
  – *use this as a guide as to how much time to spend on each question.*

Advice

- Read each question carefully before you start to answer it.
- Keep an eye on the time.
- Try to answer every question.
- Check your answers if you have time at the end.

Turn over ▶

S49817A

S 4 9 8 1 7 A 0 1 2 4

PEARSON

Answer ALL questions.

Write your answers in the spaces provided.

You must write down all the stages in your working.

1 Write down the value of the 3 in 16.35

in the tenths column

$\frac{3}{10}$

(Total for Question 1 is 1 mark)

2 Here is a list of six numbers.

1 3 6 9 12 24

Which number in the list is **not** a factor of 24?

Factors of 24 : 1×24, 2×12, 3×8, 4×6

9

(Total for Question 2 is 1 mark)

3 Write 0.21 as a fraction.

2 decimal place = 2 zeros

$\frac{21}{100}$

(Total for Question 3 is 1 mark)

4 (a) Simplify $5f - f + 2f$

$5 - 1 + 2 = 6$

$6f$

(1)

(b) Simplify $2 \times m \times n \times 8$

$2 \times 8 = 16$

$16mn$

(1)

(c) Simplify $t^2 + t^2$

2 of t^2

$2t^2$

(1)

(Total for Question 4 is 3 marks)

5 A shop sells pens at different prices.
The cheapest pens in the shop cost 27p each.

Lottie buys 18 pens from the shop.
She pays with a £10 note.

(a) If Lottie buys 18 of the cheapest pens, how much change should Lottie get?

18 pens cost: $18 \times 27p = 514p = £4.86$

Change: $£10 - £4.86$

$= £5.14$

£ 5.14

(2)

Instead of buying the cheapest pens, Lottie buys 18 of the more expensive pens.
She still pays with a £10 note.

(b) How does this affect the amount of change she should get?

The pens would cost more, therefore she would get less change

(1)

(Total for Question 5 is 3 marks)

M W

6 Michelle and Wayne have saved a total of £458 for their holiday.
Wayne saved £72 more than Michelle.

How much did Wayne save?

W saved = x
M saved = $x - 72$ ← W saved 72 more

$x + x - 72 = 458$
$2x - 72 = 458$
$2x = 530$ (+72)
$x = 265$ (÷2)

£ 265

(Total for Question 6 is 2 marks)

7 Work out 70% of £90

$70\% = 0.7$
$0.7 \times 90 = 63$

£ 63

(Total for Question 7 is 2 marks)

8 Here are four fractions.

$\frac{1}{2}$ $\frac{17}{24}$ $\frac{3}{4}$ $\frac{5}{12}$

Write these fractions in order of size.
Start with the smallest fraction.

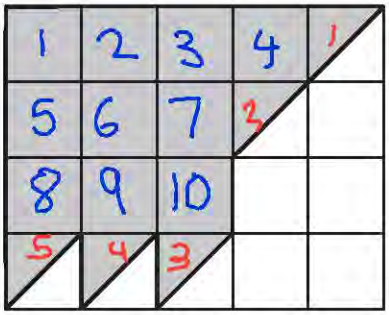
$\frac{1}{2} = 0.5$ (2)
$\frac{17}{24} = 0.7083$ (3)
$\frac{3}{4} = 0.75$ (4)
$\frac{5}{12} = 0.416$ (1)

Look at 1st and 2nd decimal places.

$\frac{5}{12}, \frac{1}{2}, \frac{17}{24}, \frac{3}{4}$

(Total for Question 8 is 2 marks)

9 What percentage of this shape is shaded?



4 × 5 = 20 squares

10 full squares and 5 × ½ squares

= 12.5 squares shaded

$\frac{12.5}{20} \times 100 =$

total

62.5 %

(Total for Question 9 is 3 marks)

10 The manager of a clothes shop recorded the size of each dress sold one morning.

10	10				
12	12				
14	14	14	14	14	14
16	16	16	16		
18	18	18			
20	20	20			

The sizes of dresses are always even numbers.
The mean size of the dresses sold that morning is 15.3

The manager says,

"The mean size of the dresses is **not** a very useful average."

(i) Explain why the manager is right.

Because 15.3 isn't a dress size.

(ii) Which is the more useful average for the manager to know, the median or the mode?
You must give a reason for your answer.

Mode, because 14 is the most common. The median is 15, which is also not a dress size.

(Total for Question 10 is 2 marks)

11 In a shop, the normal price of a coat is £65
The shop has a sale.

In week 1 of the sale, the price of the coat is reduced by 20%
In week 2 of the sale, the price of the coat is reduced by a further £10

Maria has £40

Does Maria have enough money to buy the coat in week 2 of the sale?
You must show how you get your answer.

In Week 1: Reduction by 20% = 100 − 20 = 80% = 0.8

0.8 × 65 = £52 - price in Week 1

Week 2 : Week 1 − £10

= £52 − 10 = £42

42 > 40,

Maria doesn't have enough

(Total for Question 11 is 3 marks)

12 The length of a car is 3.6 metres.

Karl makes a scale model of the car.
He uses a scale of 1 cm to 30 cm.

Work out the length of the scale model of the car.
Give your answer in centimetres.

3.6m = 360cm

1cm : 30cm
×12 ↓ ↓ ×12
12cm : 360cm

12 cm

(Total for Question 12 is 2 marks)

13 Here are the heights, in centimetres, of 15 children.

123	147	135	150	147
129	148	149	125	137
133	138	133	130	151

(a) Show this information in a stem and leaf diagram.

split numbers

Key
12|3 = 12

12	3 5 9
13	0 3 3 5 7 8
14	7 7 8 9
15	0 1

(3)

One of the children is chosen at random.

(b) What is the probability that this child has a height greater than 140 cm?

Total = 15

Number of children with height above 140 = 6

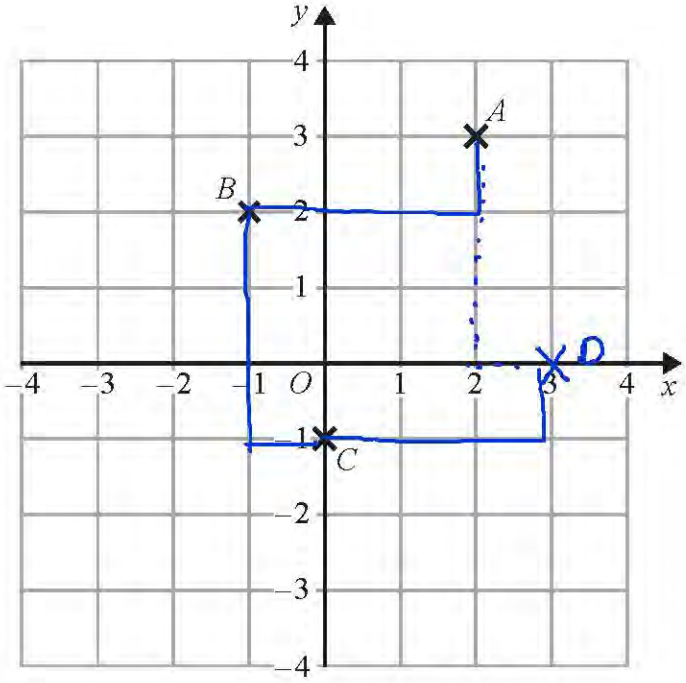
$\frac{6}{15} = \frac{2}{5} = 0.4$

0.4

(2)

(Total for Question 13 is 5 marks)

14



(a) Write down the coordinates of point C.

(x, y) ← 1 down

0 across

(0 , −1)

(1)

$ABCD$ is a square.

(b) On the grid, mark with a cross (X) the point D so that $ABCD$ is a square.

(1)

(c) Write down the coordinates of the midpoint of the line segment BC.

$\left(\frac{(-1)+0}{2}, \frac{2+(-1)}{2}\right) = \left(-\frac{1}{2}, \frac{1}{2}\right)$ (−1/2 , 1/2)

(1)

(Total for Question 14 is 3 marks)

15 (a) Work out $\frac{4}{5}$ of 210 cm.

$\frac{4}{5} \times 210 =$

168 cm

(1)

(b) Work out $(6 - 2.5)^2 + \sqrt{9.34 - 2.58}$

$3.5^2 + \sqrt{6.76}$

$= 12.25 + 2.6 =$

14.85

(2)

(Total for Question 15 is 3 marks)

16 (a) Solve $4c + 5 = 11$

$4c + 5 = 11$

-5

$4c = 6$

$\div 4$

$c = \frac{6}{4} = 1.5$

$c =$ 1.5

(2)

(b) Solve $5(e + 7) = 20$

$5e + 35 = 20$

-35

$5e = -15$

$\div 5$

$e = -3$

$e =$ -3

(2)

(c) Simplify $(m^3)^2$

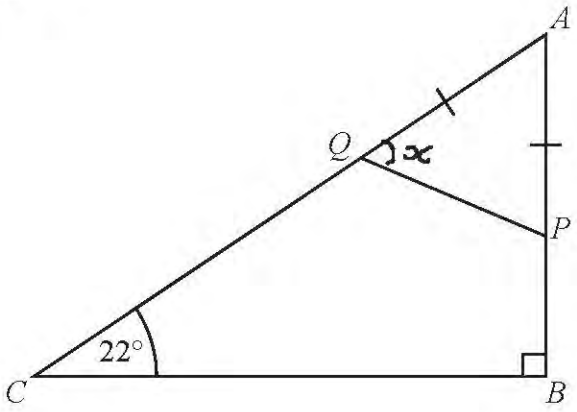
$= m^{3 \times 2} = m^6$

m^6

(1)

(Total for Question 16 is 5 marks)

17 ABC is a right-angled triangle.



P is a point on AB.
Q is a point on AC.
$AP = AQ$.

Work out the size of angle AQP.
You must give a reason for each stage of your working.

$\angle BAC = 180 - 90 - 22 = 68°$ angles in triangle ABC add to 180°

$\angle AQP = \frac{180 - 68}{2} = \frac{112}{2} = 56°$ angles in triangle (AQP) add to 180°

Base angles in isosceles triangle are equal. $AP = AQ$

56°

(Total for Question 17 is 4 marks)

18 Here is a list of ingredients for making 16 mince pies.

Ingredients for 16 mince pies
240 g of butter 350 g of flour 100 g of sugar 280 g of mincemeat

Elaine wants to make 72 mince pies.

How much of each ingredient will Elaine need?

$\frac{72}{16} = 4.5$ = scale factor

240 × 4.5 = 1080g butter
350 × 4.5 = 1575g flour
100 × 4.5 = 450g sugar
280 × 4.5 = 1260g mincemeat

butter 1080 g

flour 1575 g

sugar 450 g

mincemeat 1260 g

(Total for Question 18 is 3 marks)

19 Lethna worked out $\frac{2}{5} + \frac{1}{2}$

She wrote:

$$\frac{2}{5} + \frac{1}{2} = \frac{2}{10} + \frac{1^{\times 5}}{10} = \frac{3}{10}$$

The answer of $\frac{3}{10}$ is wrong.

(a) Describe one mistake that Lethna made.

Did not multiply the numerator of ½ by 5

(1)

Dave worked out $1\frac{1}{2} \times 5\frac{1}{3}$

He wrote:

$$1 \times 5 = 5 \quad \text{and} \quad \frac{1}{2} \times \frac{1}{3} = \frac{1}{6}$$

$$\text{so} \quad 1\frac{1}{2} \times 5\frac{1}{3} = 5\frac{1}{6}$$

The answer of $5\frac{1}{6}$ is wrong.

(b) Describe one mistake that Dave made.

$\frac{3}{2} \times \frac{16}{3} = \frac{48}{6} = 8$

Didn't convert the mixed fractions to improper fractions.

(1)

(Total for Question 19 is 2 marks)

20 Make t the subject of the formula $w = 3t + 11$ ← isolate t

$w = 3t + 11$

-11

$w - 11 = 3t$

$\div 3$

$\frac{w-11}{3} = t$

$t = \frac{w-11}{3}$

(Total for Question 20 is 2 marks)

21 Three companies sell the same type of furniture.

The price of the furniture from Pooles of London is £1480
The price of the furniture from Jardins of Paris is €1980
The price of the furniture from Outways of New York is $2250

The exchange rates are

£1 = €1.34

£1 = $1.52

Which company sells this furniture at the lowest price?
You must show how you get your answer.

London : £1480

Paris : €1980

1 : 1.34 $1980 \div 1.34 = £1477.61$

New York : $2250 \div 1.52 = £1480.26$

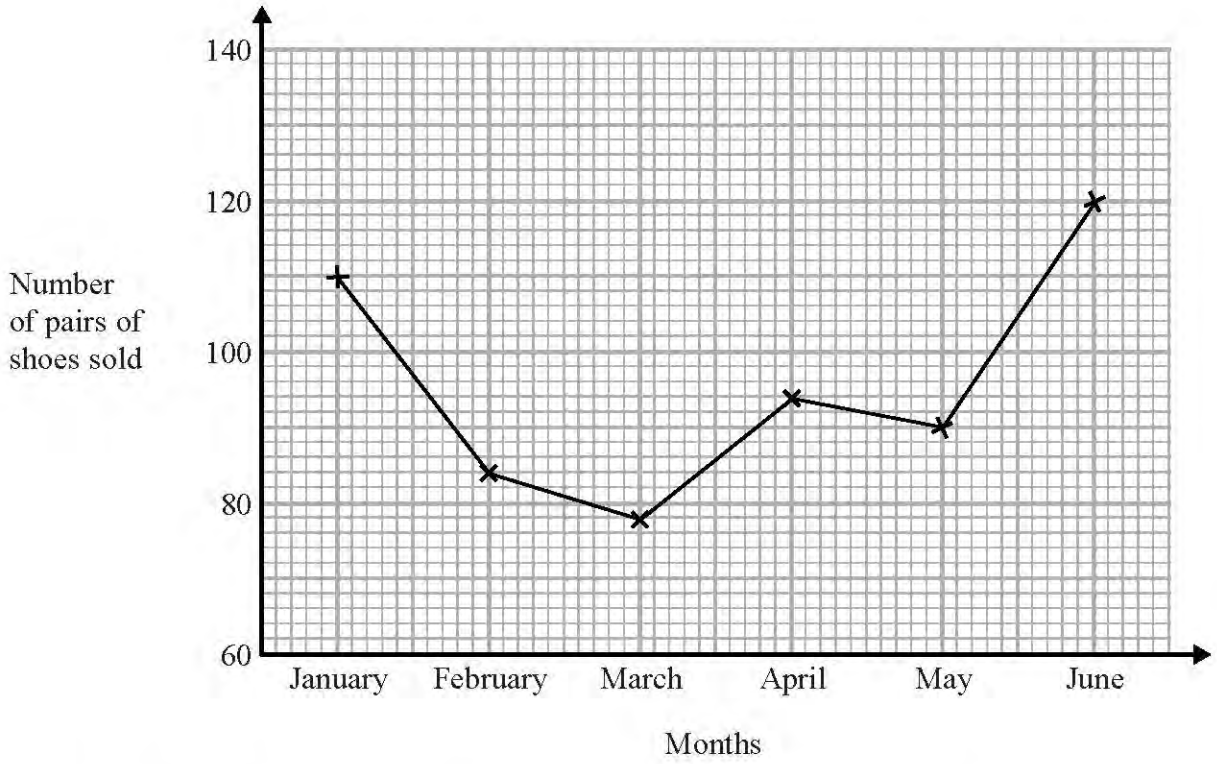
1 : 1.52

1477.61 is the lowest price

Paris sells the cheapest.

(Total for Question 21 is 3 marks)

22 The time-series graph gives some information about the number of pairs of shoes sold in a shoe shop in the first six months of 2014



The sales target for the first six months of 2014 was to sell a mean of 96 pairs of shoes per month.

Did the shoe shop meet this sales target?
You must show how you get your answer.

Mean = $\frac{\text{Total}}{\text{Freq}}$

$= \frac{110+84+78+94+90+120}{6} = 96$

$96 = 96$

Yes, the sales target was met.

(Total for Question 22 is 3 marks)

23 The grouped frequency table gives information about the heights of 30 students.

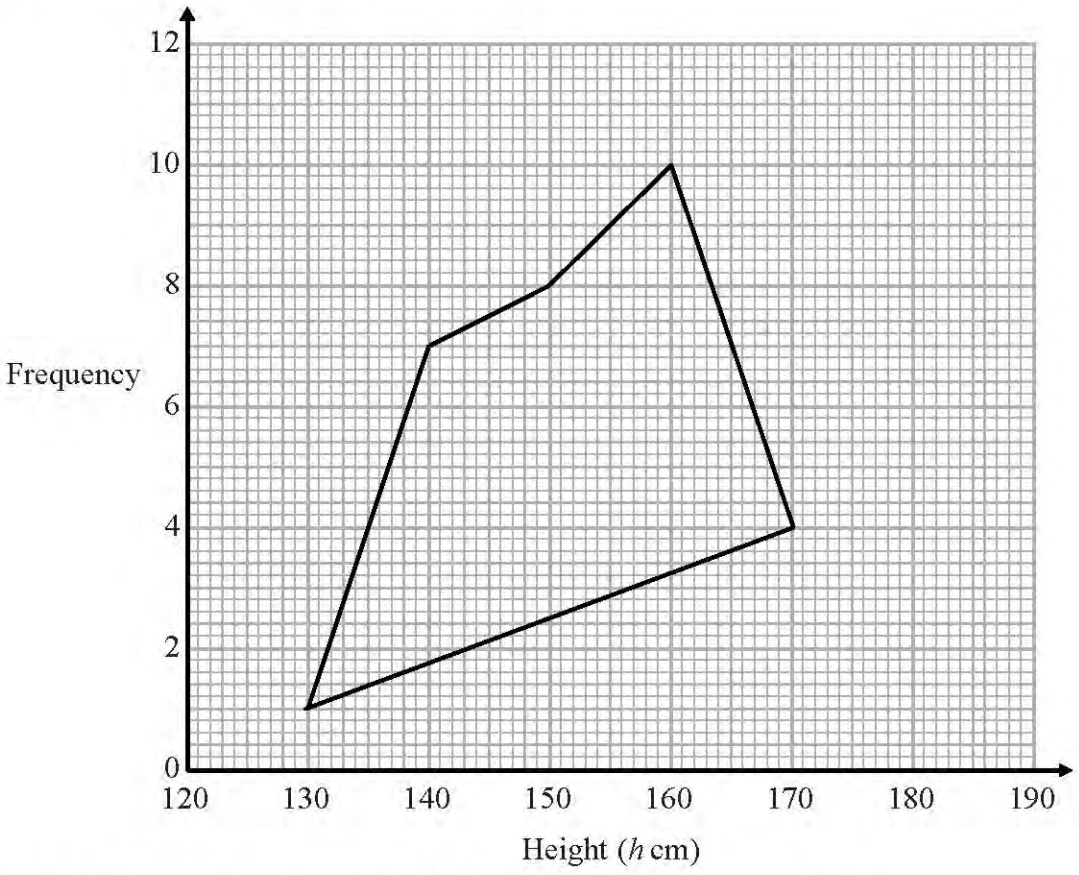
Height (h cm)	Frequency
$130 < h \leqslant 140$	1
$140 < h \leqslant 150$	7
$150 < h \leqslant 160$	8
$160 < h \leqslant 170$	10
$170 < h \leqslant 180$	4

(a) Write down the modal class interval.

10 is the biggest number $160 < h \leqslant 170$

(1)

This incorrect frequency polygon has been drawn for the information in the table.



(b) Write down two things wrong with this incorrect frequency polygon.

1 Points should be plotted midinteval

2 The first and last points shouldn't be joined

(2)

(Total for Question 23 is 3 marks)

24 At 9 am, Bradley began a journey on his bicycle.

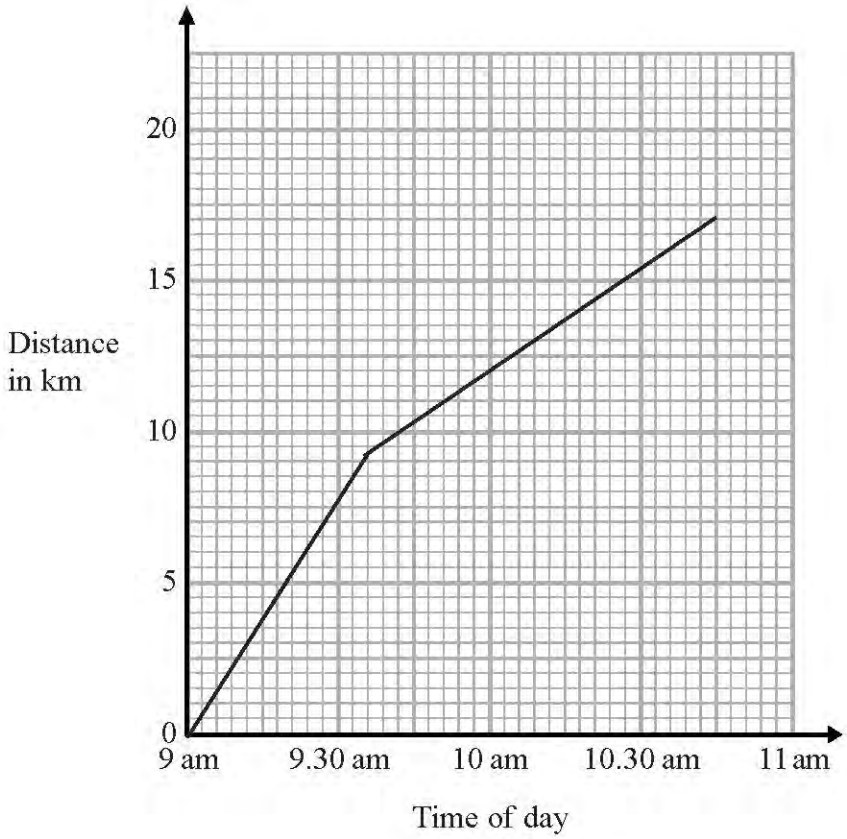
Speed = Distance / Time

From 9 am to 9.36 am, he cycled at an average speed of 15 km/h.
From 9.36 am to 10.45 am, he cycled a further 8 km.

Dist = 0.6 × 15 = 9 km

1h 9min

(a) Draw a travel graph to show Bradley's journey.



9 + 8 = 17 km

(3)

From 10.45 am to 11 am, Bradley cycled at an average speed of 18 km/h.

(b) Work out the distance Bradley cycled from 10.45 am to 11 am.

speed = dist / time ← 15 min = 1/4 h

18 × 1/4 = dist = 4.5 km

4.5 km

(2)

(Total for Question 24 is 5 marks)

25 Toby invested £7500 for 2 years in a savings account.
He was paid 4% per annum compound interest.

How much money did Toby have in his savings account at the end of 2 years?

100% + 4% = 104% = 1.04 multiplier

7500×1.04^{2} ← 2 years $= £8112$

£ 8112

(Total for Question 25 is 2 marks)

26 Becky has some marbles.
Chris has two times as many marbles as Becky. 1
Dan has seven more marbles than Chris. 2

They have a total of 57 marbles. 3

Dan says,
"If I give some marbles to Becky, each of us will have the same number of marbles."

Is Dan correct?
You must show how you get your answer.

Chris = c b = becky d = dan

① $\frac{c}{2} = b$

② $d = c + 7$

③ $b + c + d = 57$

$\frac{c}{2} + c + c + 7 = 57$

$\frac{5c}{2} + 7 = 57$

$\frac{5}{2}c = 50$

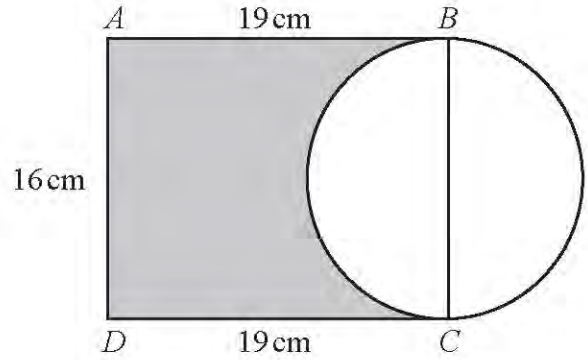
$c = 20$

Becky has $20 \div 2 = 10$ marbles
Chris has 20 marbles
Dan has $20 + 7$
$= 27$ marbles

Dan is incorrect, if Dan gives Becky 7 marbles, Becky will only have 17, but D + C have 20

(Total for Question 26 is 3 marks)

27 Here is a diagram showing a rectangle, *ABCD*, and a circle.



BC is a diameter of the circle.

Calculate the percentage of the area of the rectangle that is shaded.
Give your answer correct to 1 decimal place.

Area of rectangle = $16 \times 19 = 304\ cm^2$

Shaded region = Area of rect − Area of semi (1/2) circle

$= 304 - \frac{1}{2} \times 8^2 \times \pi = 304 - 32\pi$

Percentage = $\frac{304 - 32\pi}{304} \times 100$

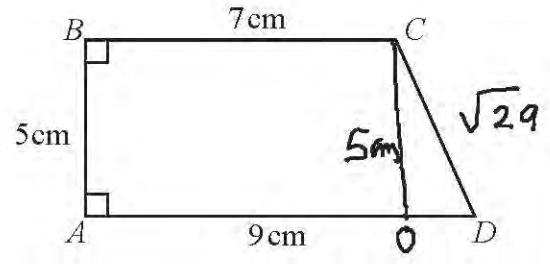
$= 66.93\%$

$3 < 5$ round down

66.9 %

(Total for Question 27 is 4 marks)

28 *ABCD* is a trapezium.



A square has the same perimeter as this trapezium.

Work out the area of the square.
Give your answer correct to 3 significant figures.

$OC = 5\text{cm}$

$OD = 9 - 7 = 2\text{cm}$

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

$5^2 + 2^2 = CD^2$

$29 = CD^2$

$CD = \sqrt{29}$

Perimeter $= 5 + 7 + 9 + \sqrt{29}$

$= 21 + \sqrt{29}$ = perimeter of square

$4x$

square: one side length $= \frac{21 + \sqrt{29}}{4}$

area $= \left(\frac{21 + \sqrt{29}}{4}\right)^2$

$= 43.5\text{cm}^2$

43.5 cm²

(Total for Question 28 is 5 marks)

TOTAL FOR PAPER IS 80 MARKS