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

Friday 10 November 2023

Morning (Time: 1 hour 30 minutes)

Paper reference **1MA1/2F**

Mathematics
PAPER 2 (Calculator)
Foundation Tier
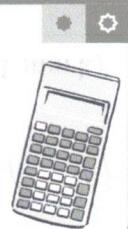
You must have: Ruler graduated in centimetres and millimetres, protractor, pair of compasses, pen, HB pencil, eraser, calculator, Formulae Sheet (enclosed). Tracing paper may be used.

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.*
- You must **show all your working**.
- 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 3.142 unless the question instructs otherwise.

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.
- Try to answer every question.
- Check your answers if you have time at the end.

Turn over ▶

Answer ALL questions.

Write your answers in the spaces provided.

You must write down all the stages in your working.

1   Write down two factors of 18

1×18

2×9 3×6

                                    1   ,   2
....

(Total for Question 1 is 1 mark)

2   Write 0.9 as a fraction.

$\frac{9}{10}$
....

(Total for Question 2 is 1 mark)

3   Change 7 metres to centimetres.

$\times 100$

700
.... centimetres

(Total for Question 3 is 1 mark)

4   Write down a square number that is between 10 and 50

16, 25, 36   or   49
....

(Total for Question 4 is 1 mark)

5   Work out 50% of 240

$240 \div 2$

120
....

(Total for Question 5 is 1 mark)

6 Lydia works for 4 hours.
She is paid £50

How much is Lydia paid per hour?

$$50 \div 2 = £25$$

$$25 \div 2$$

£ 12·50

**(Total for Question 6 is 2 marks)**

7 Here is a 3-D shape.
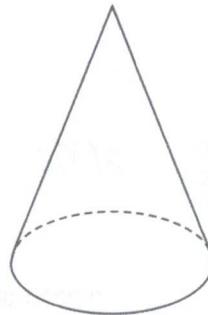
(a) Write down the name of this 3-D shape.

cone

(1)

(b) In the space below, draw a sketch of a triangular prism.

(1)
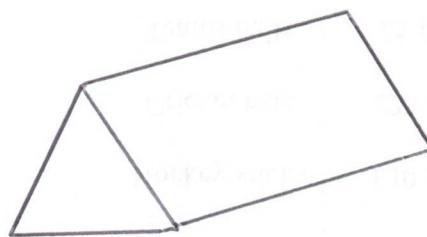
(Total for Question 7 is 2 marks)

P 6 9 5 3 1 A 0 3 2 4

8 Curtis needs to buy some items for his sports club.

Here are the prices.

Item	Price		
Footballs	£9.50 each	×5 =	47.50
Hockey sticks	£30 for 2	×3 =	90
Cricket bats	£23 each	×2 =	46
Tennis balls	£5 for 4	=	5

Total = £188·50

Curtis needs to buy

    5 footballs
    6 hockey sticks
    2 cricket bats
    4 tennis balls.

Curtis has £200 to spend.

Show that Curtis can buy all the items he needs.

He'll have £11·50 change

(Total for Question 8 is 4 marks)

P 6 9 5 3 1 A 0 4 2 4

9 Harris is buying a shirt and a tie.
He has a choice of three colours of shirt and a choice of three styles of tie.

Shirt	Tie
White (W)	Plain (P)
Blue (B)	Striped (S)
Grey (G)	Checked (C)

Harris is going to choose one shirt and one tie.

List all the possible combinations Harris can choose.

WP   BP   GP
WS   BS   GS
WC   BC   GC

(Total for Question 9 is 2 marks)

10 There are 24 red counters and 40 blue counters in a bag.

Write down the ratio of the number of red counters to the number of blue counters in the bag.
Give your ratio in its simplest form.

R : B
24 : 40

÷8

3 : 5

(Total for Question 10 is 2 marks)

11 Rima is going to roll a fair 6-sided dice.

(a) Choose the word that best describes the probability that the dice will land on the number 3

impossible	unlikely	evens	likely	certain

unlikely

(1)

(b) Choose the word that best describes the probability that the dice will land on an odd number.

impossible	unlikely	evens	likely	certain

evens

(1)

(Total for Question 11 is 2 marks)

12 A car travels at an average speed of 37 miles per hour for 3 hours.

Work out the distance that the car travels in the 3 hours.

$$37 \times 3$$

_111_ miles

(Total for Question 12 is 2 marks)

13 Milo is trying to find the area of this rectangle.

5 cm

4 cm   4 cm

5 cm
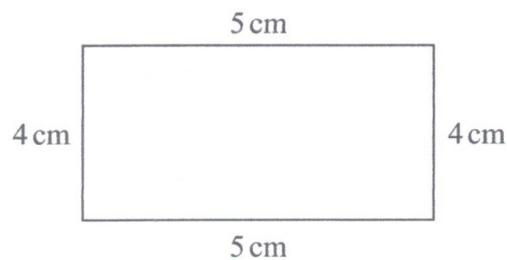
He writes,

"The area is 400 cm^2 because $5 \times 4 \times 5 \times 4 = 400$"

(a) Explain what is wrong with Milo's method.

Area is just $5 \times 4 = 20 \, cm^2$

(1)

Anya works out the area of a shape.

Her answer is 86 cm.

(b) Explain why her answer cannot be fully correct.

Units should be cm^2

(1)

(Total for Question 13 is 2 marks)

14 3 kg of flour costs £4.05

5 kg of flour and 6 kg of sugar cost £11.85

Work out the cost of 2 kg of flour and 5 kg of sugar.

1 kg of flour = 4.05 ÷ 3 = 1.35

5 kg = 1.35 × 5 = 6.75

6 kg of sugar = 11.85 − 6.75

= 5.10

1 kg of sugar = 5.10 ÷ 6 = 0.85

2 flour + 5 sugar

= 2.70 + 4.25

£ 6.95

(Total for Question 14 is 4 marks)

15 Martha and Nabeel share £120

Martha gets 72% of the money.
She spends 30% of the money she gets.

How much money does Martha have left?

M $\frac{72}{100} \times 120 = £86.40$

spends $\frac{30}{100} \times 86.40 = £25.92$

Left = 86.40 - 25.92

£ .... 60.48 ....

(Total for Question 15 is 3 marks)

16 160 people were asked to choose their favourite type of book.
They each chose from romance or adventure or horror or thriller.

85 of these people were children.
The rest were adults.

19 of the 33 people who chose romance were children.
34 of the 76 people who chose adventure were adults.
7 adults chose thriller.

The number of children who chose thriller was the same as the number of adults who chose horror.

Work out the total number of people who chose horror.
You must show how you get your answer.

	R	A	H	T	
C	19	42	4	20	85
A	14	34	20	7	75
	33	76	(24)	27	160

24

P 6 9 5 3 1 A 0 1 0 2 4

17 Here are the heights, in cm, of 16 sunflowers.

168	173	172	180	162	191	183	160
178	184	197	177	172	186	188	180

Show this information in a stem and leaf diagram.

```
16 | 8 2 0
17 | 3 2 8 7 2
18 | 0 3 4 6 8 0
19 | 1 7
```

```
16 | 0 2 8
17 | 2 2 3 7 8
18 | 0 0 3 4 6 8
19 | 1 7
```

Key:

16|8 = 168
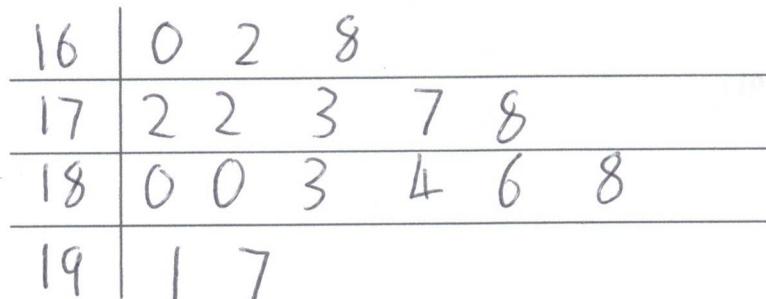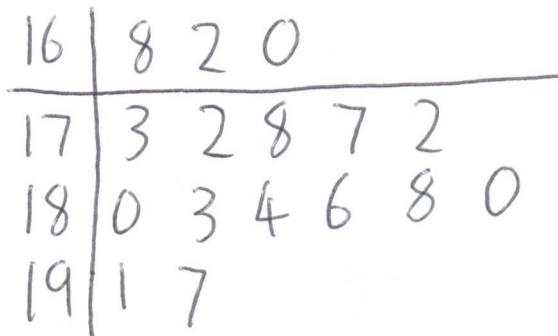
(Total for Question 17 is 3 marks)

18 (a) Work out $\left(\dfrac{9.8 + 6.8}{4.2 \times 2.1}\right)$

Give your answer as a decimal.
Write down all the figures on your calculator display.

1·8820861678

(b) Write your answer to part (a) correct to 2 decimal places.

1·88

(1)

(Total for Question 18 is 3 marks)

19 The diagram shows a quadrilateral *ABDE* and an equilateral triangle *BCD*.
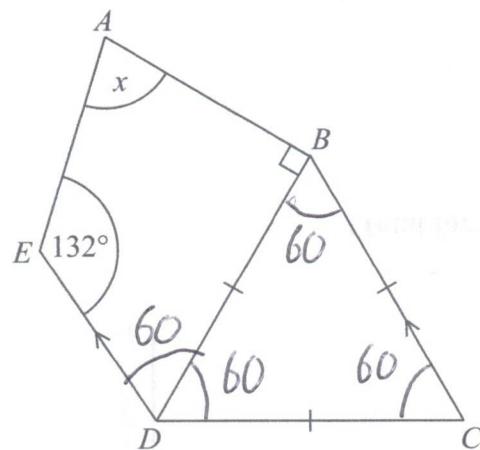
CB is parallel to *DE*.

Angle *AED* = 132°

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

Equilateral triangle, all angles = 180 ÷ 3

∠EDB = 60 → alternate angles are equal

Angles in a quadrilateral = 360

so ∠EAB = 360 − 132 − 60 − 90

78 °

(Total for Question 19 is 4 marks)

P 6 9 5 3 1 A 0 1 3 2 4

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

x	−2	−1	0	1	2	3
y	4	0	−2	−2	0	4

(2)

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

(2)
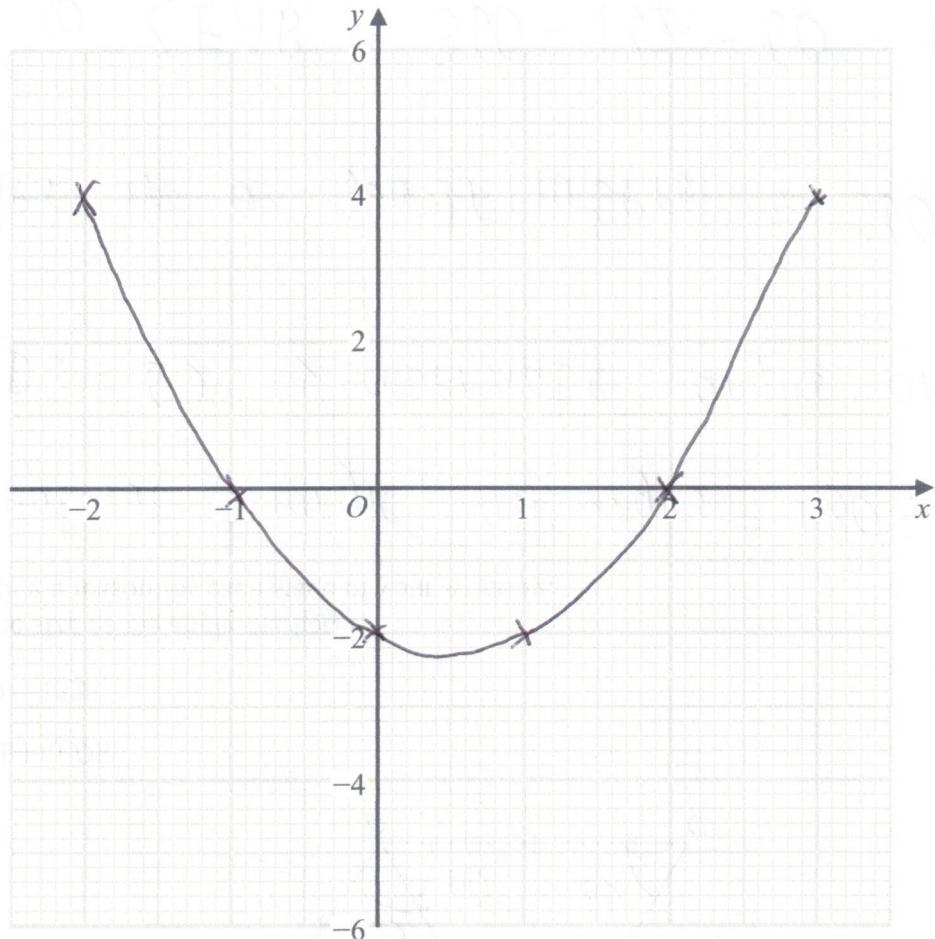
(Total for Question 20 is 4 marks)
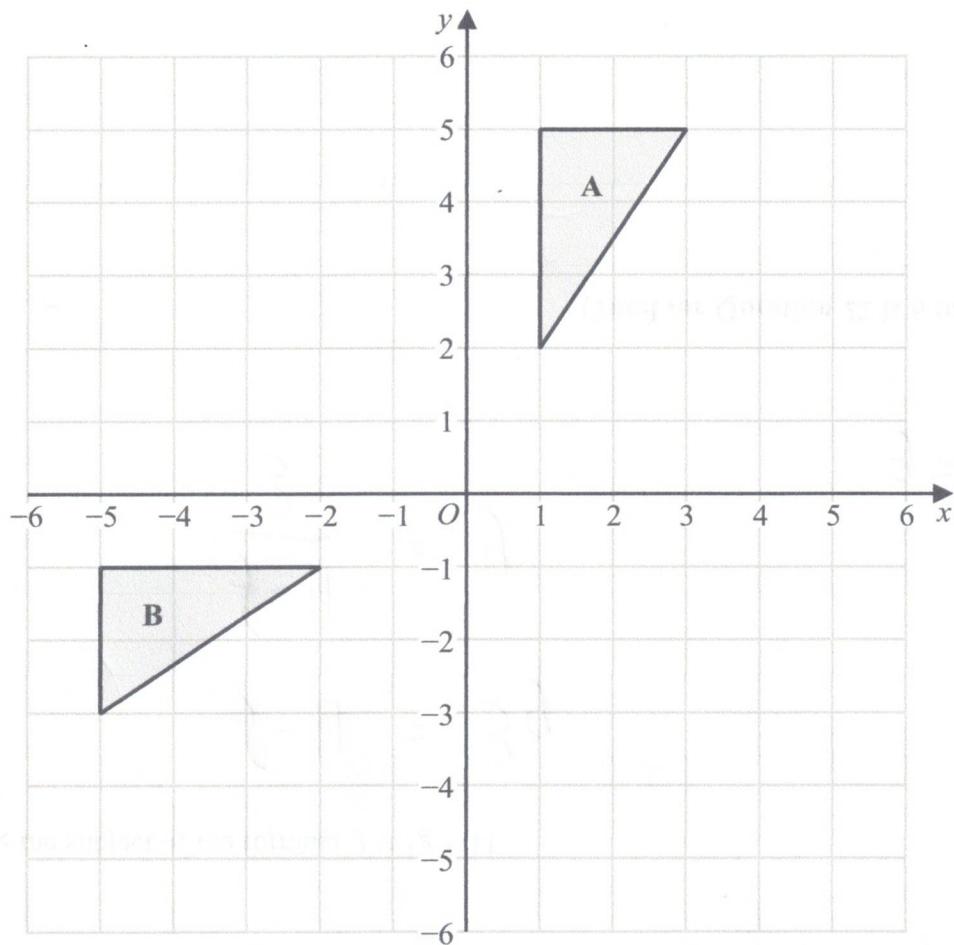
Describe fully the single transformation that maps triangle **A** onto triangle **B**.

Reflection in the line $y = -x$

(Total for Question 21 is 2 marks)

22 (a) Expand and simplify $3(2y - 5) + 7(y + 2)$

$6y \; -15 \; \Big| \; +7y \; +14$

$$\underline{13y - 1}$$

(2)

(b) Factorise fully $6x^2 + 15x$

$$3x(2x + 5)$$

(2)

(c) Make g the subject of the formula $f = 3g + 11$

$$f - 11 = 3g$$

$$\frac{f-11}{3} = g$$

$$g = \frac{f-11}{3}$$

(2)

(Total for Question 22 is 6 marks)

23 Karen is organising a party for a charity.

She spends
    £100 on food
    £120 on a hall
    £80 on a DJ.

Karen sells 54 tickets for the party.
Each ticket costs £7.50

Work out the percentage profit Karen makes for the charity.

$54 \times 7.50 = £405$ takings

£300 spent

profit = £105

$\dfrac{105}{300} \times 100 = 35$

35 %

(Total for Question 23 is 4 marks)

P 6 9 5 3 1 A 0 1 7 2 4

24 Andrew invests £4500 in a savings account for 2 years.
The account pays compound interest at a rate of 3.4% per year.

Calculate how much Andrew has in this savings account at the end of the 2 years.

$$4500 \times 1.034^2 = 4811.202$$

£ 4811.20

(Total for Question 24 is 2 marks)

25 Solve $5x - 14 = 52 - x$

$$6x - 14 = 52$$
$$6x = 66$$

+x

+14

÷6

$x =$ 11

(Total for Question 25 is 3 marks)

26 Chris, Debbie and Errol share some money in the ratio $3:4:2$
Debbie gets £120

Chris then gives some of his share to Debbie and some of his share to Errol.
The money that Chris, Debbie and Errol each have is now in the ratio $2:5:3$

How much money did Chris give to Errol?

$$C \quad\quad D \quad\quad E$$
$$3 \quad\quad 4 \quad\quad 2$$
$$\quad\quad 120 \Big)\times 3$$
$$90 \quad\quad 120 \quad\quad 60$$

Total = £270

————————— New

$$2 \quad\quad 5 \quad\quad 3$$

$$E = \frac{3}{10} \text{ of } 270 = 81$$

$$81 - 60$$

21

£ ....21....................

(Total for Question 26 is 4 marks)

27 The bearing of port B from port A is $147°$

Work out the bearing of port A from port B.

147

33
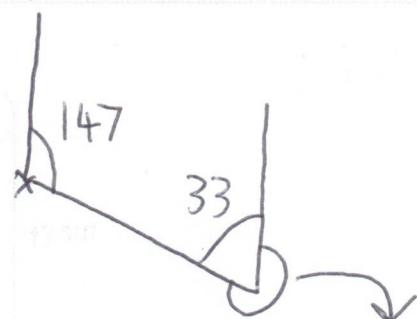
$$360 - 33 = 327 \quad °$$

(Total for Question 27 is 2 marks)

Turn over ▶

28 The diagram shows an empty tank in the shape of a cylinder.
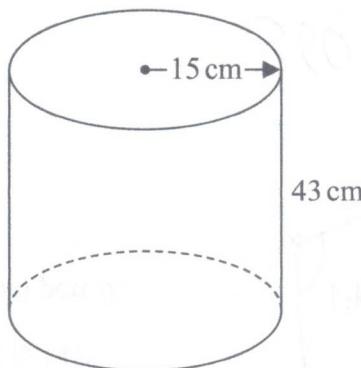
The cylinder has radius 15 cm and height 43 cm.

Water flows into the tank at a rate of 0.47 litres per minute.

Calculate the number of minutes it will take to completely fill the tank.
Give your answer correct to the nearest minute.

$$V = \pi \times 15^2 \times 43 = 9675\pi \ cm^3$$
$$= 9675\pi \ ml$$
$$= 30.3949... \ litres$$

$$\div 0.47 = 64.67...$$

65

.... minutes

(Total for Question 28 is 4 marks)

P 6 9 5 3 1 A 0 2 0 2 4

29 *ABC* is a right-angled triangle.

Hyp (crossed out)

Opp

x

49°

B 28 cm *C*

adj
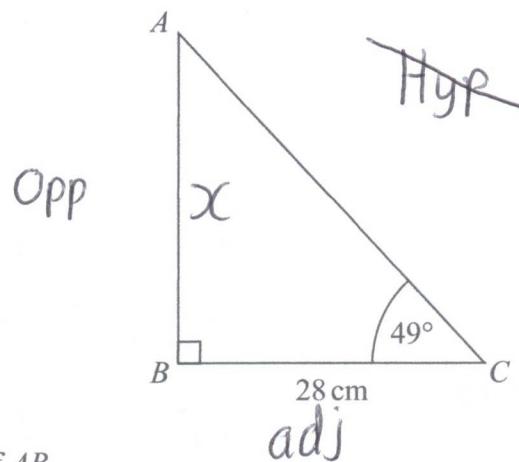
Calculate the length of *AB*.
Give your answer correct to 3 significant figures.

$T \overset{O}{} A$

$$x = \tan 49 \times 28$$
$$= 32.210$$

32.2 .... cm

(Total for Question 29 is 2 marks)

P 6 9 5 3 1 A 0 2 1 2 4

30 Solve the simultaneous equations

$$3x + y = -4.5 \quad \text{—①}$$
$$4x + 3y = -3.5 \quad \text{—②}$$

①×3 ⇒
$$9x + 3y = -13.5 \quad -$$
②
$$4x + 3y = -3.5$$
$$5x = -10$$
$$x = -2$$

① ⇒
$$-6 + y = -4.5$$
$$y = 1.5$$

x = 2

y = 1.5

(Total for Question 30 is 3 marks)

TOTAL FOR PAPER IS 80 MARKS