



EP.M91 Mixed Problem-Solving Paper F

GL ASSESSMENT GL-11PLUS-MATHS · Calculators not allowed · about 75 minutes

Total Marks

Name: _____ Date: ____ / ____ / ____

Answer ALL questions. Show all your working.

- 1 Tom buys a pencil case for £4.20 and a set of pens for £2.85. He pays with a £10 note. How much change does he receive?

(Total for Question 1 is 2 marks)

- 2 A crate contains 84 oranges. $\frac{2}{7}$ of the oranges are bruised. How many oranges are not bruised?

(Total for Question 2 is 2 marks)

- 3 A film starts at 14:40 and finishes at 16:15. How long, in minutes, does the film last?

(Total for Question 3 is 2 marks)

- 4 A rectangular football pitch measures 18 m by 9 m. Find the perimeter of the pitch.

(Total for Question 4 is 2 marks)

- 5 A jacket usually costs £65. In a sale it is reduced by 20%. Find the sale price of the jacket.

(Total for Question 5 is 2 marks)

6 Reo, Sula and Priya share £108 in the ratio 4 : 5 : 3. How much does Sula receive?

(Total for Question 6 is 3 marks)

7 A sequence begins 7, 12, 17, 22, ... Write down the next two terms of the sequence.

(Total for Question 7 is 2 marks)

8 Farhan buys 4 identical notebooks at £1.65 each and a diary costing £3.20. He pays with a £20 note. How much change does he receive?

(Total for Question 8 is 3 marks)

9 Write these fractions in order of size, smallest first: $\frac{3}{4}$, $\frac{5}{6}$, $\frac{7}{12}$

(Total for Question 9 is 3 marks)

10 An L-shaped room is formed by cutting a 5 m by 3 m rectangular corner out of a 12 m by 8 m rectangle. Find the area of the L-shaped room.

(Total for Question 10 is 3 marks)

11 Find the mean of these six numbers: 4, 9, 13, 20, 16, 10.

(Total for Question 11 is 2 marks)

12 A cuboid box has length 9 cm, width 5 cm and height 4 cm. Find the volume of the box.

(Total for Question 12 is 3 marks)

13 A cyclist rides 18 km in the first hour of a journey and 24 km in the second hour. Find her average speed for the whole journey.

(Total for Question 13 is 3 marks)

14 By rounding each number to the nearest 10, estimate the value of 38×21 .

(Total for Question 14 is 2 marks)

15 A bag contains 5 red counters, 3 blue counters and 2 green counters. A counter is picked at random. What is the probability that it is green? Give your answer as a fraction in its simplest form.

(Total for Question 15 is 3 marks)

- 16** A shop has 240 items in stock. 35% of the stock is sold in one day. How many items are left in stock?

(Total for Question 16 is 3 marks)

- 17** At midnight the temperature is -8 degrees C. By 6 am it has risen by 11 degrees C. By midday it has then fallen by 4 degrees C from its 6 am value. Find the temperature at midday.

(Total for Question 17 is 3 marks)

- 18** A roll of fabric is 5.4 m long. Pieces of length 70 cm are cut from the roll. How many whole pieces can be cut, and what length of fabric is left over?

(Total for Question 18 is 4 marks)

- 19** N is a whole number such that $20 < N < 40$. N is a multiple of both 6 and 8. Find N .

(Total for Question 19 is 3 marks)

- 20** Three consecutive even numbers add up to 108. What is the largest of the three numbers?

(Total for Question 20 is 4 marks)

- 21** A rectangular wall measures 4.5 m by 3.2 m. Tins of paint each cover 6 m^2 , and paint can only be bought in whole tins. How many tins must be bought to paint the whole wall?

(Total for Question 21 is 4 marks)

- 22** The ratio of Mia's age to her brother Theo's age is 3 : 7. The sum of their ages is 40. Find the ratio of Mia's age to Theo's age in 5 years' time, giving your answer in its simplest form.

(Total for Question 22 is 4 marks)

- 23** A closed cuboid box has length 10 cm, width 6 cm and height 5 cm. Find the total surface area of the box.

(Total for Question 23 is 4 marks)

- 24** A van travels 60 km at an average speed of 30 km/h, then a further 105 km at an average speed of 35 km/h. Find the total time taken for the whole journey, in hours.

(Total for Question 24 is 4 marks)

- 25** A charity raises money from three fundraising events: a bake sale, a raffle and a sponsored walk. The bake sale raised £145 and the raffle raised £212. The sponsored walk raised 1.5 times as much as the bake sale and raffle combined. Find the total amount raised by all three events.

(Total for Question 25 is 5 marks)

- 26** Ali saves money in a bank account.

(a) Ali saves £400 in an account that pays simple interest of 5% of the original amount per year. How much interest has been added after 3 years? **(2)**

.....

(b) Ali then withdraws the total amount in the account (his original £400 plus the interest from part a) and shares it equally between himself and 3 friends. How much does each person receive? **(3)**

.....

(Total for Question 26 is 5 marks)

Mark scheme · EP.M91 Mixed Problem-Solving Paper F

Question 1

- **M1** $4.20 + 2.85 = 7.05$ (total spent)
- **A1** £2.95 cao
- **Answer: £2.95**

Question 2

- **M1** $84 \div 7 = 12$, so $2/7$ of 84 = 24 (bruised oranges)
- **A1** 60 cao
- **Answer: 60**

Question 3

- **M1** 14:40 to 16:00 is 80 minutes (oe)
- **A1** 95 cao
- **Answer: 95 minutes**

Question 4

- **M1** $18 + 9 = 27$ (oe)
- **A1** 54 m cao
- **Answer: 54 m**

Question 5

- **M1** 10% of 65 = 6.50, so 20% = 13 (oe)
- **A1** £52 cao
- **Answer: £52**

Question 6

- **M1** $4 + 5 + 3 = 12$ parts (oe)
- **M1** $108 \div 12 = 9$ (value of one part)
- **A1** £45 cao
- **Answer: £45**

Question 7

- **M1** identifies the term-to-term rule as add 5 (oe)
- **A1** 27 and 32 cao
- **Answer: 27, 32**

Question 8

- **M1** $4 \times 1.65 = 6.60$ (cost of the notebooks)
- **M1** $6.60 + 3.20 = 9.80$ (total cost)
- **A1** £10.20 cao
- **Answer: £10.20**

Question 9

- **M1** identifies 12 as a common denominator for all three fractions (oe)
- **M1** converts to $9/12$, $10/12$, $7/12$ (oe)
- **A1** $7/12$, $3/4$, $5/6$ cao
- **Answer: $7/12$, $3/4$, $5/6$**

Question 10

- **M1** $12 \times 8 = 96 \text{ m}^2$ (area of the full rectangle)
- **M1** $5 \times 3 = 15 \text{ m}^2$ (area removed)
- **A1** 81 m^2 **cao**
- **Answer: 81 m^2**

Question 11

- **M1** $4 + 9 + 13 + 20 + 16 + 10 = 72$ (oe)
- **A1** 12 **cao**
- **Answer: 12**

Question 12

- **M1** $9 \times 5 = 45$ (area of the base)
- **M1** 45×4 (oe)
- **A1** 180 cm^3 **cao**
- **Answer: 180 cm^3**

Question 13

- **M1** $18 + 24 = 42$ (total distance)
- **M1** average speed = total distance / total time (oe)
- **A1** 21 km/h **cao**
- **Answer: 21 km/h**

Question 14

- **M1** rounds to 40 and 20 (oe)
- **A1** 800 **cao**
- **Answer: 800**

Question 15

- **M1** $5 + 3 + 2 = 10$ counters in total (oe)
- **M1** probability = $2/10$ (oe)
- **A1** $1/5$ **cao**
- **Answer: $1/5$**

Question 16

- **M1** 10% of 240 = 24, so 35% = 24×3.5 (oe)
- **M1** 35% of 240 = 84 (items sold)
- **A1** 156 **cao**
- **Answer: 156**

Question 17

- **M1** $-8 + 11 = 3$ (temperature at 6 am)
- **M1** $3 - 4$ (oe)
- **A1** -1 degrees C **cao**
- **Answer: -1 degrees C**

Question 18

- **M1** $5.4 \text{ m} = 540 \text{ cm}$ (oe)
- **M1** $540 / 70 = 7$ remainder 50 (oe)
- **A1** 7 pieces **cao**
- **A1** 50 cm left over **cao**
- **Answer: 7 pieces, with 50 cm left over**

Question 19

- **M1** lists multiples of 6 between 20 and 40: 24, 30, 36 (oe)
- **M1** lists multiples of 8 between 20 and 40: 24, 32 (oe)
- **A1** 24 cao
- **Answer: 24**

Question 20

- **M1** forms $x + (x + 2) + (x + 4) = 108$, where x is the smallest number (oe)
- **M1** simplifies to $3x + 6 = 108$ (oe)
- **M1** solves to $x = 34$ (oe)
- **A1** 38 cao
- **Answer: 38**

Question 21

- **M1** $4.5 \times 3.2 = 14.4 \text{ m}^2$ (area of the wall)
- **M1** $14.4 / 6 = 2.4$ (oe)
- **M1** recognises 2.4 tins must be rounded up, since paint is sold in whole tins (oe)
- **A1** 3 cao
- **Answer: 3 tins**

Question 22

- **M1** $3 + 7 = 10$ parts; $40 / 10 = 4$ (oe)
- **M1** Mia = 12, Theo = 28 (oe)
- **M1** in 5 years: Mia = 17, Theo = 33 (oe)
- **A1** 17 : 33 cao
- **Answer: 17 : 33**

Question 23

- **M1** $10 \times 6 = 60$ (area of the top and bottom faces, one each)
- **M1** $10 \times 5 = 50$ and $6 \times 5 = 30$ (area of the front/back and side faces, one each)
- **M1** $60 + 50 + 30 = 140$, then doubles for the pairs of faces (oe)
- **A1** 280 cm^2 cao
- **Answer: 280 cm^2**

Question 24

- **M1** time = distance / speed (oe)
- **M1** $60 / 30 = 2$ hours (first part of the journey)
- **M1** $105 / 35 = 3$ hours (second part of the journey)
- **A1** 5 hours cao
- **Answer: 5 hours**

Question 25

- **M1** $145 + 212 = 357$ (bake sale and raffle combined)
- **M1** 1.5×357 (oe)
- **A1** £535.50 cao (sponsored walk)
- **M1** $357 + 535.50$ (oe)
- **A1** £892.50 cao
- **Answer: £892.50**

Question 26

- (a) **M1** 5% of $400 = 20$ (interest per year)
- (a) **A1** £60 cao
- (a) **Answer: £60**
- (b) **M1** $400 + 60 = 460$ (ft from a)
- (b) **M1** $460 / 4$ (oe)
- (b) **A1** £115 cao
- (b) **Answer: £115**