



EP.M143 CEM Style Numerical Reasoning Paper 1

CEM CEM-MOCK-1 · Calculators not allowed · about 40 minutes

Total Marks

Name: _____ Date: ____ / ____ / ____

Answer ALL questions. Show all your working.

- 1 Round 3,748 to the nearest 100.

(Total for Question 1 is 1 mark)

- 2 A bus ticket costs £1.80. How much do 5 tickets cost?

(Total for Question 2 is 1 mark)

- 3 Write $\frac{3}{5}$ as a decimal.

(Total for Question 3 is 1 mark)

- 4 Sofia has £12. She buys a sandwich for £2.75 and a drink for £1.40. How much change should she get from £12?

(Total for Question 4 is 1 mark)

- 5 A class of 28 pupils is split into teams of 4. How many teams are formed and how many pupils are left without a full team?

(a) How many full teams? (1)

(b) How many pupils left without a full team? (1)

(Total for Question 5 is 2 marks)

- 6** An item priced at £48 is reduced by 15%. Work out the sale price, to the nearest penny.

(Total for Question 6 is 2 marks)

- 7** What is 7 squared minus 9?

(Total for Question 7 is 1 mark)

- 8** A recipe needs 250 g flour to make 8 muffins. How much flour is needed to make 20 muffins?

(Total for Question 8 is 2 marks)

- 9** A train journey of 180 km takes 2 hours. At this speed how far does the train travel in 45 minutes?

(Total for Question 9 is 2 marks)

- 10** Three consecutive even numbers add to 84. Find the numbers.

(Total for Question 10 is 2 marks)

- 11** A shop sells pencils at 5 for £1.20. How much would 18 pencils cost? Give your answer in pounds to the nearest penny.

(Total for Question 11 is 3 marks)

12 Convert 2 hours 40 minutes into minutes.

(Total for Question 12 is 2 marks)

13 A rectangle has length 9 cm and width 4.5 cm. Find its area in cm^2 .

(Total for Question 13 is 2 marks)

14 A gardener plants shrubs in a row every 0.75 m. If the row is 12 m long and a shrub is at the start, how many shrubs will be planted in the row?

(Total for Question 14 is 3 marks)

15 A bottle contains 1.5 litres. How many 250 ml glasses can be filled from the bottle?

(Total for Question 15 is 2 marks)

16 Find the value of $12 \times 12 - 12 \times 11$.

(Total for Question 16 is 2 marks)

17 A car uses 6 litres of petrol to travel 90 km. How many kilometres can it travel on 1 litre? Then how far on 22 litres?

(Total for Question 17 is 3 marks)

18 The product of two whole numbers is 56. One number is 7. What is the other number?

(Total for Question 18 is 2 marks)

19 A cinema ticket costs £8.50. A family of 2 adults and 3 children gets a 10% discount on the total bill. Calculate how much the family pays after the discount. Give answer to nearest penny.

(Total for Question 19 is 2 marks)

20 A number pattern starts 2, 5, 11, 23, ... Each term after the first is 2 times the previous term plus 1. Work out the 6th term.

(Total for Question 20 is 3 marks)

Mark scheme · EP.M143 CEM Style Numerical Reasoning Paper 1

Question 1

- **B1** 3,700 cao
- **Answer: 3,700**

Question 2

- **B1** £9.00 cao
- **Answer: £9.00**

Question 3

- **B1** 0.6 cao
- **Answer: 0.6**

Question 4

- **B1** £7.85 cao
- **Answer: £7.85**

Question 5

- (a) **B1** 7 cao
- (a) **Answer: 7**
- (b) **B1** 0 cao
- (b) **Answer: 0**

Question 6

- **M1** Method for 15% of 48 seen (eg $0.15 \times 48 = 7.20$) or $48 - 7.20$
- **A1** £40.80 cao
- **Answer: £40.80**

Question 7

- **B1** 40 cao
- **Answer: 40**

Question 8

- **M1** Scale factor $20/8 = 2.5$ seen and method $250 \times 2.5 = 625$
- **A1** 625 g cao
- **Answer: 625 g**

Question 9

- **M1** Find speed $180/2 = 90$ km/h or convert 45 minutes as 0.75 h and multiply
- **A1** 67.5 km cao
- **Answer: 67.5 km**

Question 10

- **M1** Use even numbers $n, n+2, n+4$ and set $3n+6 = 84$ or equivalent
- **A1** 26, 28, 30 cao
- **Answer: 26, 28, 30**

Question 11

- **M1** Find unit price: $1.20 / 5 = 0.24$ or equivalent
- **M1** Multiply unit price by 18: $0.24 \times 18 = 4.32$ shown
- **A1** £4.32 cao
- **Answer: £4.32**

Question 12

- **M1** 2 hours = 120 minutes and add 40
- **A1** 160 minutes cao
- **Answer: 160 minutes**

Question 13

- **M1** Method: area = length x width seen (9×4.5)
- **A1** 40.5 cm^2 cao
- **Answer: 40.5 cm^2**

Question 14

- **M1** Find number of intervals: $12 / 0.75 = 16$ or method to find spacing
- **M1** Include shrub at start so count = intervals + 1 = 17 seen
- **A1** 17 shrubs cao
- **Answer: 17 shrubs**

Question 15

- **M1** Convert litres to ml: $1.5 \text{ L} = 1500 \text{ ml}$ and divide $1500 / 250 = 6$
- **A1** 6 cao
- **Answer: 6**

Question 16

- **M1** Factor $12(12 - 11)$ or compute 144 and 132 then subtract
- **A1** 12 cao
- **Answer: 12**

Question 17

- **M1** Find km per litre: $90 / 6 = 15 \text{ km per litre}$
- **M1** Multiply $15 \times 22 = 330$ shown
- **A1** 1 litre $\rightarrow$ 15 km and 22 litres $\rightarrow$ 330 km cao
- **Answer: 15 km per litre; 330 km**

Question 18

- **M1** Divide 56 by 7
- **A1** 8 cao
- **Answer: 8**

Question 19

- **M1** Total before discount = $5 \times 8.50 = 42.50$ or equivalent
- **A1** After 10% discount: $42.50 - 4.25 = £38.25$ cao
- **Answer: £38.25**

Question 20

- **M1** Continue pattern: 4th term 23; 5th term = $2 \times 23 + 1 = 47$
- **M1** 6th term = $2 \times 47 + 1 = 95$ shown
- **A1** 95 cao
- **Answer: 95**