2.47-5 Mixed Problem-Solving Paper E: 30-minute Pack

GL ASSESSMENT GL-11PLUS-MATHS · Calculators not allowed · about 30 minutes

Total Marks

Name: _____ Date: ____ / ____ / _____

Answer ALL questions. Show all your working.

1 A machine fills 32 identical bottles in 4 minutes, working at a constant rate. How many bottles does it fill in 15 minutes?

(3)

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2 A ferry travels 54 km in 3 hours at a constant speed.

(a) Find the ferry's average speed, in km/h. **(2)**

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(b) At this speed, how long would it take the ferry to travel 30 km? Give your answer in minutes. **(2)**

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3 A fruit squash is made by mixing water, orange concentrate and lime concentrate in the ratio 8:3:1. A jug contains 480 ml of the squash in total. How much orange concentrate is in the jug?

(3)

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4 A box contains 96 crayons. 3/8 of the crayons are broken. How many crayons are not broken?

(2)

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5 A shop increases the price of a bicycle by 25%. The new price is £275. Find the original price.

(3)

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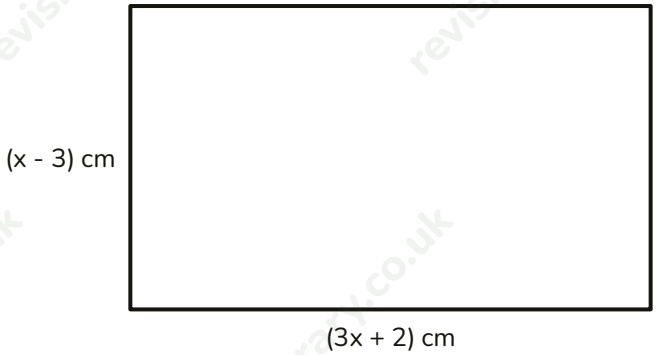
6 A rectangular patio measures 6.4 m by 5.3 m. Paving slabs are sold only in packs that each cover 4 square metres, and whole packs must be bought to cover the entire patio. Each pack costs £27. Calculate the total cost of the paving slabs needed.

(4)

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7 A rectangle has length (3x + 2) cm and width (x - 3) cm. The perimeter of the rectangle is 46 cm. Find the value of x.

Diagram NOT accurately drawn



(4)

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8 A drawer contains 5 black socks and 3 white socks, and no other socks. Two socks are taken from the drawer at random, one after the other, without replacement. Work out the probability that both socks are black.

(4)

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9 A swimming gala starts at 13:15 and finishes at 15:52. How long, in minutes, does the gala last?

(2)

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10 A sack of potatoes weighs 3.4 kg. A sack of carrots weighs 950 g. What is the total mass of both sacks, in kilograms?

(2)

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11 Find the mean of these six numbers: 4, 9, 7, 12, 10, 6

(2)

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Mark scheme · 2.47-5 Mixed Problem-Solving Paper E: 30-minute Pack

Question 1

32 / 4 = 8 (bottles per minute)	**M1**
8 x 15 (complete correct method)	**M1**
120 cao	**A1**

Answer: 120 bottles

Question 2

(a) 54 / 3 (complete correct method)	**M1**
(a) 18 km/h cao	**A1**

(a) Answer: 18 km/h

(b) 30 / 18 = 5/3 hours (or equivalent, e.g. finds time per km then multiplies by 30)	**M1**
(b) 100 minutes cao, ft their speed from (a)	**A1**

(b) Answer: 100 minutes

Question 3

8 + 3 + 1 = 12 parts; 480 / 12 = 40 (finds the value of one part)	**M1**
3 x 40 (complete correct method)	**M1**
120 ml cao	**A1**

Answer: 120 ml

Question 4

96 / 8 = 12 (finds one eighth)	**M1**
60 cao	**A1**

Answer: 60 crayons

Question 5

recognises the new price is 125% (or 1.25 x) of the original price	**M1**
275 / 1.25 (complete correct method)	**M1**
£220 cao	**A1**

Answer: £220

Question 6

6.4 x 5.3 = 33.92 (area of the patio)	**M1**
33.92 / 4 = 8.48, rounds up to 9 packs since whole packs must be bought to cover the entire patio	**M1**
9 x 27 (complete correct method)	**M1**
£243 cao	**A1**

Answer: £243

Question 7

sets up 2 x [(3x + 2) + (x - 3)] = 46, or equivalent	**M1**
simplifies to 8x - 2 = 46	**M1**
solves 8x = 48	**M1**
6 cao	**A1**

Answer: x = 6

Question 8

P(first sock is black) = 5/8	**M1**
P(second sock is black, given the first was black) = 4/7	**M1**
multiplies 5/8 x 4/7 = 20/56	**M1**
5/14 oe (accept 20/56) cao	**A1**

Answer: 5/14

Question 9

13:15 to 15:15 = 2 hours (120 minutes), then adds the remaining 37 minutes to 15:52	**M1**
157 minutes cao	**A1**

Answer: 157 minutes

Question 10

3.4 kg = 3400 g (or 950 g = 0.95 kg)	**M1**
4.35 kg cao	**A1**

Answer: 4.35 kg

Question 11

4 + 9 + 7 + 12 + 10 + 6 = 48	**M1**
8 cao	**A1**

Answer: 8

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