



UKCAT Mini-Mock Exam 2 Answers

SECTION 2

QUANTITATIVE REASONING

10 Minutes

Instructions to Candidates

You have 1 minute to read these instructions.

You will be presented with questions that most often refer to charts and graphs containing data. Additional information may also be found within the question itself.

You may use a calculator.

It is in your best interest to answer all items as there is no penalty for guessing. All unanswered items will be scored as incorrect.

This section consists of 5 sets, each with 4 questions

Cycling

1. Correct answer is D (11 mph).

We know that speed = distance/time. The distance Mark travels to Brighton is: 1108 miles – 1086 miles = 22 miles. The journey takes 2 hours, 15 minutes, but if we take away the rest time (3 x 5 minutes = 15 minutes), the time taken is 2 hours. Thus speed = $22/2 = 11$ mph.

2. Correct answer is E (1783.1 km).

It is given that 1 km = 0.6214 miles. He has done 1108 miles by the time he has arrived in Brighton, therefore: $1108/0.6214 = 1783.1$ km.

3. Correct answer is C (23.7 mph).

From Question 1, we know the distance travelled is 22 miles. The time taken (38 minutes) has to be converted to hours by dividing by 60 ($38/60 = 0.6333$). Therefore, the speed of the car is:

$$22/0.6333 = 34.7 \text{ mph speed.}$$

The difference between the two is: $34.7 - 11 = 23.7$ mph faster.

4. Correct answer is B (601 miles).

The total number of miles when Mark arrives in Brighton is 1108 miles, whereas he bought it at 483 miles. Steve used it to travel to and back from the office, two times ($6 \text{ miles} \times 2 \times 2 = 24$). Therefore, Mark has travelled:

$$1108 - 483 - 24 = 601 \text{ miles by the time he arrives in Brighton.}$$

GP surgery

5. Correct answer is C (62).

This simply involves adding up the total number of GP surgeries from the table. Therefore: $15 + 5 + 23 + 11 + 8 = 62$.

6. Correct answer is B (180,000).

There are 15 surgeries within 5 km of the hospital, and we are told that each surgery has an average

of 12,000 patients. Therefore: $15 \times 12,000 = 180,000$.

7. Correct answer is E (Can't tell).

We are told that there are 8 surgeries over 20 km away, but we don't know how many of these surgeries lie within 25 km. Therefore we cannot calculate the answer with certainty from the data. In addition to this, not all members of the population may be registered with a GP, and contrastingly some members of the population may be registered with more than one GP meaning that the number of patients in each GP surgery does not necessarily equate to the population.

8. Correct answer is C (156,000).

We know that there are 23 surgeries between 10-14 km away; with an average of 12,000 patients per surgery, there are a total of: $23 \times 12,000 = 276,000$ patients. The nearby city has a population of 120,000 patients, therefore: $276,000 - 120,000 = 156,000$ patients who live 10-14 km away but not in the city.

Sailing Boat

9. Correct answer is A (1100 hrs).

Using the rearranged speed equation (time = distance/speed), we can calculate the time taken to reach Port Lebacca. Firstly, Colin covers 3 nautical miles at a speed of 6 knots. This gives a time of: $3 \text{ miles} / 6 \text{ knots} = 0.5$ hours. Similarly, he covers 5 nautical miles at 10 knots, giving: $5 / 10 = 0.5$ hours. Thus in total, it takes $0.5 + 0.5 = 1$ hour to travel to Port Lebacca, meaning he arrives at 1100 if he departs at 1000.

10. Correct answer is C (1310 hrs).

After arriving at Port Lebacca, his 1 and a half hour break takes him to 1230. The time taken to sail back is: $8 \text{ nautical miles} / 12 \text{ knots} = 2/3$ hours. $2/3$ hours $\times 60 = 40$ minutes. Adding this onto 1230 takes us to 1310.

11. Correct answer is D (29.632 km).

We know the total distance, in nautical miles, to be: $5 + 3 = 8$ miles ($\times 2$, for return journey) = 16 miles. One nautical mile = 1852 m. Thus Colin travels: $16 \times 1852 = 29,632 \text{ m} = 29.632 \text{ km}$.

12. Correct answer is B (1 hour).

The total distance travelled is 16 miles, which took 1 hour, 40 minutes (1 hour to Port Lebacca, 40 minutes back to Holetown). Thus Colin's average speed is: $16/1.666 = 9.6$ knots.

We are told that a motor will add 6.4 knots on average to the speed; thus: $9.6 + 6.4 = 16$ knots.

Thus with a motor: time = $16/16 = 1$ hour.

Fence painting

13. Correct answer is A (0.71 m²).

The area of a circle is $\pi \times \text{radius}^2$. Using $\pi = 3.14159$, the area is: $3.14159 \times 0.3^2 = 0.2827$. However, there are 5 semi-circles here, so we should divide the area by 2 and multiply by 5. Thus: $(0.2827/2) \times 5 = 0.71 \text{ m}^2$ (2 decimal places).

14. Correct answer is D (2.70m).

The area of one panel is width x height. We know the width to be 0.9 m, and as the radius is 0.3 m, the width of the panel must be the diameter – 0.6 m. Thus the area of one panel is: $0.9 \times 0.6 = 0.54 \text{ m}^2$. As there are 5 panels, the total area is: $0.54 \times 5 = 2.70 \text{ m}^2$.

15. Correct answer is A (3.41 m²).

This question involves adding the answer from Question 14 to that of Question 15: $0.71 + 2.7 = 3.41 \text{ m}^2$.

16. Correct answer is E (1.16 L).

We know that the total area to paint is 3.41 m^2 . 1 L covers 10 m^2 , so currently $3.41/10 \times 100 = 34.1\%$ of the paint pot has been used. This leaves 65.9% left = 0.659 L remaining. Since paint comes in 1.5 L pots, there will be $(1.5 - 0.341) = 1.159 \text{ L}$ remaining.

The Wedding Kitchen Company

17. Correct answer is D (£666.05).

Here, we would total the costs for each menu type. Since 10% of guests are vegetarians, there are $0.1 \times 140 = 14$ vegetarians. The remainder is: $140 - 14 = 126$. There is a 50/50 split between beef and lamb, so there are $126/2 = 63$ guests each having lamb and beef. Working out the costs:

Vegetarians: $14 \times £2.89 = £40.46$

Lamb: $63 \times £5.21 = £328.23$

Beef: $63 \times £4.72 = £297.36$.

The sum total of this is £666.05.

18. Correct answer is C (15).

The venue which is 3 miles away will cost £100, whereas the venue 17 miles away will cost £180. The difference is thus £80. Given all extra guests would choose lamb (costing £5.21), the number of extra guests would be: $80/5.21 = 15.35\dots$, meaning the nearest answer is 15 extra guests.

19. Correct answer is B (£1502.79).

We need to total all costs to give an overall value.

Transport: £180.

Staff: $£200 + £300 + 200 = £700$

Food:

Beef: $58 \times £4.72 = £273.76$

Lamb: $62 \times £5.21 = £323.02$

Vegetarian: $9 \times £2.89 = £26.01$.

Total = $180 + 700 + 273.76 + 323.02 + 26.01 = £1502.79$.

20. Correct answer is C (£232).

The easiest way to calculate this answer is to calculate the difference between a lamb and a vegetarian dish, and multiply this by 100.

The difference for 1 person is: $£5.21 - £2.89 = £2.32$. For 100 people, it is $£2.32 \times 100 = £232$.