UCAT Quantitative Reasoning: Question Examples

Passage 1

The table describes 5 (fictional) prescription drugs used to treat various conditions. The information presented includes how much of each drug should be taken per dose, how frequently it should be taken, and the cost of manufacturing the drug.

Patients are prescribed a certain quantity of the drug and instructed to take it as frequently as directed until all of it has been consumed.

(1g = 1000mg)

Drug	Dosage (mg)	Frequency	Cost (£/g)
Opopide	150	Once every 6 hrs	1.93
Devazine	75	1x daily	0.17
Tazrine	80	Once every 12 hrs	2.68
Etheril	.	3x daily	2.21
Letherax	250	1x daily	4.49

Themes used: Fees, prices, costs and tariffs; production, manufacture and industry; unit conversions

Question 1
A patient is prescribed 2.4g of Tazrine. For how many days will they be taking the drug until it runs out?

A. 3
B. 7.5
C. 10
D. 15
E. 30

Correct Answer: D

Explanation
First convert the quantity of Tazrine prescribed to mg by multiplying by 1000

2.4g = 2400mg

A single dose of Tazrine is 80mg. Use this information to calculate the total number of doses that can be given from the quantity of Tazrine prescribed

2400 / 80 = 30 doses

Finally, Tazrine is taken every 12hrs, or in other words, there are two doses per day. To calculate how many days the prescribed quantity will last, take the total number of possible doses (30) and divide by 2.

30 / 2 = 15 days

Skills used:
Common functions, fractions, unit conversion

Question 2
How much does it cost to manufacture a full week's prescription of Opopide?

A. £0.27
B. £1.92
C. £8.11
D. £11.53
E. £15.44

Correct Answer: C

Explanation:
First, calculate the total number of individual doses of Opopide required for an entire week. You are told in the question that Opopide is taken every 6 hours, or 4 times / day, hence:

4 x 7 = 28 doses

A single dose of Opopide is 150mg. You need to use this information to work out how much Opopide is present in 28 doses

28 x 150 = 4200mg

The manufacturing costs are given in £/g, so convert the total quantity of Opopide to g by dividing by 1000

Converting mg to g → 4200mg = 4.2g

Finally, you know you have 4.2g of Opopide, and that it costs £1.93 to produce a gram of Opopide, so multiply these two numbers to get the total cost
4.2 x 1.93 = £8.11

Could also use estimation as a slightly quicker method:
Round £1.93 to nearest whole pound → £2

2 x 4.2 = 8.4

Look for answer closest to ~£8.40, which is £8.11

Skills used:
Common functions, rounding and estimation, unit conversion

Question 3
A patient is prescribed an amount of Etheril, which they take for exactly 1 week. The quantity prescribed cost £5.11 (rounded to 3 significant figures) to manufacture. How much Etheril is taken in a single dose?

A. 110mg
B. 304mg
C. 535mg
D. 90mg
E. 130mg

Correct Answer: A

Explanation:
The cost of manufacturing the unknown quantity is £5.11, and the table states that 1g of Etheril costs £2.21 to produce; therefore, to calculate the value of the unknown quantity:

5.11 / 2.21 = 2.31g

2.31g = 2310mg

The patient takes Etheril for a week, at a frequency of 3 times daily, therefore to calculate the individual dose:

2310 / (3 x 7) = 110mg

Skills used:
Common functions, information extrapolation, unit conversion

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Question 4

The dosages given are for adults. For children, the dose should be 60% of the original and be taken as frequently as the adult doses. What is the difference (in mg) between a child's dose of Letherax, and a child's dose of Tazrine?

A. 70mg
B. 100mg
C. 102mg
D. 105mg
E. 202mg

Correct Answer: C

Explanation:

Calculate the child's dose of the two drugs by finding 60% of the original dosages

Letherax normal dose = 250mg

250 x 0.6 = 150

Tazrine normal dose = 80mg

80 x 0.6 = 48

Find the difference between the two children's' doses

150 – 48 = 102mg

Skills used:

Common functions, percentages