Estimation

Foundation / Higher | Written solutions

ROUNDING TO CONVENIENT NUMBERS

Question 1

Round 78 to 80 and 54 to 50: $80 \times 50 = 4000$.

Question 2

$399 \approx 400$ and $49 \approx 50$, so $399 \div 49 \approx 400 \div 50 = 8$.

Question 3

$12.3 \approx 10$ and $3.9 \approx 4$, giving $10 \times 4 = 40$.

Question 4

$84 \div 19.6 \approx 80 \div 20 = 4$.

Question 5

$7.9 \div 0.52 \approx 8 \div 0.5 = 16$.

Question 6

$48.3 \div 5.01 \approx 50 \div 5 = 10$.

Question 7

Round $73 \approx 70$, $2.3 \approx 2$ and $5.2 \approx 5$: $70 \div (2 + 5) = 70 \div 7 = 10$.

Question 8

$(19.8 + 61.6) \div 7.9 \approx (20 + 60) \div 8 = 80 \div 8 = 10$.

Question 9

$(7.2 \times 4.9) \div 5.1 \approx (7 \times 5) \div 5 = 7$.

Question 10

$5.912 \div 2.98 \approx 6 \div 3 = 2$.

Question 11

Choose easy nearby numbers: $(7.84 \times 15.2 + 3.91) \div 4.07 \approx (8 \times 15 + 4) \div 4 = 124 \div 4 = 31$.

Question 12

$37.7 \div 6.12 \approx 36 \div 6 = 6$. Using $40 \div 6 \approx 6.7$ is also a reasonable estimate.

ESTIMATING IN CONTEXT

Question 13

a) Round each price upwards: $4 \times £0.90 + 5 \times £2 = £3.60 + £10 = £13.60$.

b) This is an overestimate because both rounded prices are above the actual prices.

Question 14

a) $4.75 \approx 5$ and $18.40 \approx 20$, so $3 \times £5 + 2 \times £20 = £15 + £40 = £55$.

b) This is an overestimate: both replacement prices are higher.

Question 15

a) $9.78 \div 2.04 \approx 10 \div 2 = 5$ servings.

b) The quotient is an overestimate: 10 is larger than 9.78 and 2 is smaller than 2.04. For complete servings, the actual amount makes only 4.

Question 16

a) $198 \div 21.3 \approx 200 \div 20 = 10$ km per litre.

b) This is an overestimate: the distance was rounded up and the fuel used was rounded down.