

ESTIMATING

Task 1 – Estimate each of the following calculations.

1) $1.58 + 2.31$

$$2 + 2 = 4$$

2) 4.56×11.34

$$5 \times 10 = 50$$

3) 4.1^2

$$4 \times 4 = 16$$

4) $5.23 \times 4.56 + 17.1$

$$5 \times 5 + 20 = 45$$

5) $71.8 \div 3.92 + 18.6$

$$70 \div 4 + 20 = 37.5$$

6) $123.4 - 78.9 \times 0.27$

$$\begin{aligned} 100 - 80 \times 0.3 \\ = 100 - 24 \\ = 76 \end{aligned}$$

7) $(4.89 + 7.13) \times 6.4$

$$(5 + 7) \times 6 = 72$$

8) $\frac{5.67 + .92}{0.52}$

$$\frac{6 + 10}{0.5}$$

$$= \frac{16}{0.5}$$

$$= 32$$

9) $\frac{12.3 \times 4.5}{2.1} \times 9.8$

$$\frac{10 \times 5}{2} \times 10$$

$$= 25 \times 10$$

$$= 250$$

10) $\frac{278 \div \sqrt{97.2}}{3.4} + 4.5$

$$\frac{300 \div \sqrt{100}}{3} + 5$$

$$= \frac{300 \div 10}{3} + 5$$

$$= 15$$

11) $\frac{0.25 \times 93 \times 87}{22 \div 3.9}$

$$\frac{0.3 \times 90 \times 90}{20 \div 4}$$

$$= \frac{2430}{5}$$

$$= 486$$

12) $\frac{5}{2.1} + 3.09 \div 0.49$

$$\frac{5}{2} + 3 \div 0.5$$

$$2.5 + 6$$

$$= 8.5$$

Task 2

- 13) A mechanic replaces three car parts costing £85.60, £159.99 and £97.80. Estimate the total cost of the parts. Is your answer an under or overestimate? Give a reason for your answer.

$$90 + 200 + 100 = \text{£}390$$

The answer is an overestimate, as the values were rounded up.

- 14) A company produces 487 items a day for 26 days. Estimate the total number of items produced.

$$500 \times 30 = 15,000$$

- 15) A cyclist travels 17.8 km in the morning and 26.4 km in the afternoon, then returns 22.9 km by car. Estimate the total distance travelled.

$$20 + 30 + 20 = 70 \text{ km}$$

- 16) A teacher earns £298.55 a day for 195 days of work. Estimate their total earnings. Is your estimate an under or overestimate? Give a reason for your answer.

$$\text{£}300 \times 200 = \text{£}60,000$$

The answer is an overestimate, as both values were rounded up.

- 17) A tank holds 82.4 litres of water. Estimate many full 3.91 litre buckets can be filled from it. Is your estimate an under or overestimate? Give a reason for your answer.

$$80 \div 4 = \mathbf{20 \text{ buckets}}$$

The answer is an underestimate as the total litres were rounded up and the bucket size was rounded down.

- 18) A student scores 17.6, 22.3 and 15.9 in three quizzes. Estimate their total score.

$$20 + 20 + 20 = \mathbf{60}$$

- 19) A car travels 214.7 miles using 38.3 litres of fuel. Estimate the number of miles per litre. Is your estimate an under or overestimate? Give a reason for your answer.

$$200 \div 40 = \mathbf{5 \text{ miles per litre}}$$

The answer is an underestimate. The miles were rounded down and litres rounded up.

- 20) A phone plan costs £26.48 per month. Estimate the cost of the phone plan after six months.

$$\mathbf{£30} \times 6 = \mathbf{£180}$$

- 21) A company orders 196.8 metres of fabric, which costs £18.78 per metre. They also pay a fixed delivery fee of £37.95. Estimate their total cost. Is your estimate an under or overestimate? Give a reason for your answer.

$$200 \times \mathbf{£20} = \mathbf{£4000}$$

$$\mathbf{Delivery} \approx \mathbf{£40}$$

$$\mathbf{Total} = \mathbf{£2000} + \mathbf{£40} = \mathbf{£4040}$$

The answer is an overestimate. All costs were rounded up.

- 22) A circular patio is being paved. The radius of the patio is 4.73 metres. Each paving slab covers approximately 0.49 m^2 . Estimate how many slabs are needed to cover the whole patio.

$$\mathbf{Radius} \approx \mathbf{5 \text{ m}}$$

$$\begin{aligned} \mathbf{Area} &\approx \pi \times r^2 = 3 \times 5^2 \\ &= 3 \times 25 \\ &= \mathbf{75 \text{ m}^2} \end{aligned}$$

$$\mathbf{Slab \text{ area}} \approx \mathbf{0.5 \text{ m}^2}$$

$$75 \div 0.5 = \mathbf{150 \text{ slabs}}$$