ESTIMATION – PRACTICE QUESTIONS
NON-CALCULATOR

1.
Estimate 50.1 × 1.98

$50 \times 2 = 100$

2.
Estimate 102 × 3.95

$100 \times 4 = 400$

3.
Estimate 38 × 5.04

$40 \times 5 = 200$

4.
Estimate 988 × 62

$1{,}000 \times 60 = 60{,}000$

5.
Estimate 2,020 × 4.94

$2{,}000 \times 5 = 10{,}000$

6.
Estimate 718 × 33

$700 \times 30 = 21{,}000$

7.
Estimate 154 ÷ 29

$150 \div 30 = 5$

8.
Estimate 24.4 ÷ 7.7

$24 \div 8 = 3$

9.
Estimate 89 ÷ 8.76

$90 \div 9 = 10$

10.
Estimate 812 ÷ 38

$800 \div 40 = 20$

11.
Estimate 3,107 ÷ 288

$3{,}000 \div 300 = 10$

12.
Estimate 9,855 ÷ 19

$10{,}000 \div 20 = 500$

13.

Estimate $\frac{1.88\times81}{38} \approx \frac{2\times80}{40} = \frac{160}{40} = 4$

14.

Estimate $\frac{22\times9.14}{54} \approx \frac{20\times10}{50} = \frac{200}{50} = 4$

15.

Estimate $\frac{444}{0.89\times54} \approx \frac{450}{1\times50} = \frac{450}{50} = 9$

16.

Estimate $\frac{49\times31}{1.79\times11} \approx \frac{50\times30}{2\times10} = \frac{1500}{20} = 75$

17.

Estimate $\sqrt{103}$

$\sqrt{100} = 10$

18.

Estimate $\sqrt{66}$

$\sqrt{64} = 8$

19.

Estimate $\sqrt{23}$

$\sqrt{25} = 5$

20.

Estimate $\sqrt[3]{28}$

$\sqrt[3]{27} = 3$

21.

Estimate $\sqrt[3]{130}$

$\sqrt[3]{125} = 5$

22.

Estimate $\sqrt[3]{981}$

$\sqrt[3]{1000} = 10$

23.

Estimate $\sqrt{18 \times 4.11}$

$\sqrt{20 \times 4} = \sqrt{80}$

≈ 9

24.

Estimate $\frac{\sqrt{50} \times 108}{69}$

$\frac{7 \times 100}{70} = \frac{700}{70} = 10$

25.

Estimate $\sqrt{\frac{310}{0.52 \times 4.3}}$

$\sqrt{\frac{300}{0.5 \times 4}} = \sqrt{\frac{300}{2}} = \sqrt{150}$

≈ 12

26.

Estimate $\sqrt[3]{\frac{290}{5.2 \times 9.84}}$

$\sqrt[3]{\frac{300}{5 \times 10}} = \sqrt[3]{\frac{300}{50}} = \sqrt[3]{6}$

≈ 2

27.
A town contains 20,611 houses.
Each house has on average 3.25 people living in them.

(a) Work out an estimate for the total population of the town.

20,000 × 3 = 60,000

(b) Is your answer an overestimate or an underestimate? Explain your reasoning.

Underestimate, because I rounded both numbers down.

28.
Adrian bought 195 pencils.
The pencils cost 9p each.

(a) Work out an estimate for the total cost of the pencils, in pounds.

200 × 10 = 2,000p = £20

(b) Is your answer an overestimate or an underestimate? Explain your reasoning.

Overestimate, because I rounded both numbers up.

29.
Brianna makes bracelets.
Each bracelet requires 22 centimetres of string.
Brianna has 8.9 metres of string.

(a) Work out an estimate for the number of bracelets Brianna can make.

$\frac{1000}{20} = 50$ bracelets

(b) Is your answer an overestimate or an underestimate? Explain your reasoning.

Overestimate, because I rounded 9.9 metres up and 22 centimetres down.

30.
Cal earns £7.75 per hour.
Cal works 37.5 hours each week.

(a) Work out an estimate for how much Cal earns each month.

£10 × 40 = £400 per week

£400 × 5 = £2,000 per month.

(b) Is your answer an overestimate or an underestimate? Explain your reasoning.

Overestimate, because I rounded both numbers and the number of weeks up.

31.
Darren is filling plant pots with soil.
Darren bought a bag of soil which contains 28 litres of soil.
Each plant pot can hold 3,150 millilitres of soil.

(a) Work out an estimate for the number of plant pots Darren can fill.

$\frac{30,000}{3,000}$ = 10 plant pots

(b) Is your answer an overestimate or an underestimate? Explain your reasoning.

Overestimate, because I rounded 28 litres up and 3,150 millilitres down.

32.

(a) Show, using estimation, that $\frac{3.9+\sqrt{97}}{2.2} < 7$

$\frac{4+\sqrt{100}}{2} = \frac{4+10}{2} = \frac{14}{2} = 7$. This is an overestimate, so it must be less than 7

(b) Show, using estimation, that $\frac{33}{\sqrt{123}} < 3$

$\frac{33}{\sqrt{121}} = \frac{33}{11} = 3$. This is an overestimate, so it must be less than 3.

33.
A barrel has a capacity of 20.6 litres.
The barrel is 76% full with water.
Every second, 4.87 millilitres of water leaks from the barrel.

(a) Work out an estimate for the number of minutes it will take the barrel to be emptied.

20,000 × 75% = 15,000

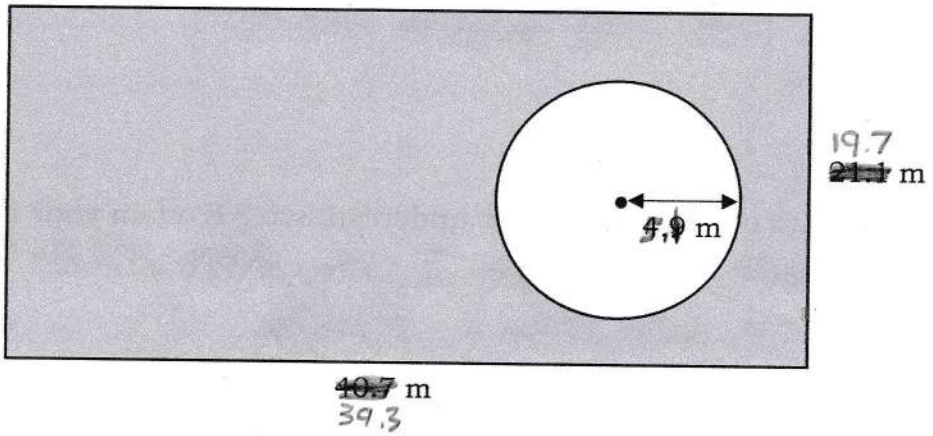
15,000 ÷ 5 = 3,000 seconds

= 3000/60 = 50 minutes

(b) Is your answer an overestimate or an underestimate? Explain your reasoning.

Underestimate, because I rounded 20.6 and 76% down, and 4.87 up.

34.
(a) Calculate an estimate for the area of the shaded region.



Area of rectangle ≈ 40 × 20 = 800 m²

Area of circle ≈ 3 × 5² = 75 m²

Shaded region ≈ 800 − 75 = 725 m²

(b) Is your answer an overestimate or an underestimate? Explain your reasoning.

Overestimate, because I rounded 19.7 and 39.3 up, and π and 5.1 down.