

Foundation GCSE: Estimation Problems

Name: _____

Class: _____

Instructions: Estimate the value of each calculation by rounding each number to 1 significant figure first. Questions are ordered from easiest (1) to hardest (20). Working out must be shown.

1. Estimate the value of 3.2×4.8 .
2. Estimate the value of 8.9×2.1 .
3. Estimate the value of 41×79 .
4. Estimate the value of $385 \div 1.9$.
5. Estimate the value of $\frac{52 \times 8.8}{4.1}$.
6. Estimate the value of $\frac{794}{21.3 - 3.8}$.
7. Estimate the value of $19.4^2 + \sqrt{98}$.
8. Estimate the value of $\frac{48.2 \times 3.9}{1.85}$.
9. Estimate the value of $\sqrt{419} \times 9.8$.
10. Estimate the value of $\frac{623}{4.1 \times 7.9}$.
11. Estimate the value of 3.14×19.2^2 .
12. Estimate the value of $\frac{91.4 - 18.6}{4.8 + 2.1}$.
13. Estimate the value of $\sqrt{82.4 + 16.8}$.
14. Estimate the value of $\frac{7.82 \times 51.3}{0.49}$.
15. Estimate the value of $\frac{398 \times 203}{9.7 - 5.2}$.
16. Estimate the value of $\sqrt{3890} + 11.2^2$.
17. Estimate the value of $\frac{103.5 - 28.1}{\sqrt{24.8}}$.
18. Estimate the value of $\frac{5.92 \times 408}{19.3 \times 2.1}$.
19. Estimate the value of $\frac{\sqrt{625.1} + 31.4^2}{4.88 \times 2.03}$.
20. Estimate the value of $\frac{(9.85)^3 - 198}{\sqrt{401} \times 2.9}$.

Answers & Worked Solutions

1. 15

$$3 \times 5 = 15.$$

2. 18

$$9 \times 2 = 18.$$

3. 3 200

$$40 \times 80 = 3\,200.$$

4. 200

$$400 \div 2 = 200.$$

5. 100

$$\frac{50 \times 9}{4} \approx \frac{450}{4} = 112.5 \approx 100.$$

6. 50

$$\frac{800}{20 - 4} = \frac{800}{16} = 50.$$

7. 410

$$20^2 + \sqrt{100} = 400 + 10 = 410.$$

8. 100

$$\frac{50 \times 4}{2} = \frac{200}{2} = 100.$$

9. 200

$$\sqrt{400} \times 10 = 20 \times 10 = 200.$$

10. 20

$$\frac{600}{4 \times 8} = \frac{600}{32} \approx 20.$$

11. 1 200

$$3 \times 20^2 = 3 \times 400 = 1\,200.$$

12. 10

$$\frac{90 - 20}{5 + 2} = \frac{70}{7} = 10.$$

13. 10

$$\sqrt{80 + 20} = \sqrt{100} = 10.$$

14. 800

$$\frac{8 \times 50}{0.5} = \frac{400}{0.5} = 800.$$

15. 20 000

$$\frac{400 \times 200}{10 - 5} = \frac{80\,000}{5} = 16\,000 \approx 20\,000.$$

16. 160

$$\sqrt{4\,000} \approx 60 \text{ and } 10^2 = 100; 60 + 100 = 160.$$

17. 15

$$\frac{100 - 30}{\sqrt{25}} = \frac{70}{5} = 14 \approx 15.$$

18. 60

$$\frac{6 \times 400}{20 \times 2} = \frac{2\,400}{40} = 60.$$

19. 100

$$\frac{\sqrt{600} + 30^2}{5 \times 2} \approx \frac{25 + 900}{10} = \frac{925}{10} \approx 100.$$

20. 30

$$\frac{10^3 - 200}{\sqrt{400} \times 3} = \frac{1\,000 - 200}{20 \times 3} = \frac{800}{60} \approx 13.$$