

Foundation GCSE: Whole Number Arithmetic

Name: _____

Class: _____

Instructions: Answer all questions. Questions are ordered from easiest (1) to hardest (20). Working out should be shown where appropriate.

1. Calculate: $7 + 8$
2. Calculate: $15 - 6$
3. Calculate: 6×4
4. Calculate: $36 \div 4$
5. Calculate: $34 + 58$
6. Calculate: $92 - 37$
7. Calculate: 14×6
8. Calculate: $96 \div 8$
9. Work out the value of 5^3
10. Find the square root of 196
11. Calculate: $3 + 4 \times 5$
12. Calculate: $(8 + 2) \times 6$
13. Work out: $24 + 12 \div 4 - 2$
14. Find the highest common factor (HCF) of 24 and 36
15. Find the lowest common multiple (LCM) of 6 and 8
16. Write 360 as a product of its prime factors in index form
17. Estimate the value of $\frac{48.2 \times 3.9}{1.9^2}$ by rounding each number to 1 significant figure
18. Work out: $3 \times (5 + 2)^2 - 15 \div 3$
19. A train has 8 carriages. Each carriage seats 72 people. If 85% of the total seats are taken, how many empty seats are there in total?
20. Calculate the exact value of $\frac{\sqrt{144} + 4^3}{2 \times (10 - 3) + 2}$

Answers & Worked Solutions

1. 15

$$7 + 8 = 15.$$

2. 9

$$15 - 6 = 9.$$

3. 24

$$6 \times 4 = 24.$$

4. 9

$$36 \div 4 = 9.$$

5. 92

Add units ($4 + 8 = 12$), add tens ($30 + 50 = 80$), total 92.

6. 55

$$\begin{array}{r} 8 \\ \cancel{0}^{12} \\ -37 \\ \hline 55 \end{array}$$

7. 84

Partition: $10 \times 6 = 60$ and $4 \times 6 = 24$;
 $60 + 24 = 84$.

8. 12

Division: $96 \div 8 = 12$ (since $12 \times 8 = 96$).

9. 125

Cube calculation: $5 \times 5 \times 5 = 25 \times 5 = 125$.

10. 14

Since $14^2 = 196$, the square root is 14.

11. 23

BODMAS: Multiply first ($4 \times 5 = 20$), then add 3.

12. 60

BODMAS: Brackets first ($8 + 2 = 10$), then multiply by 6.

13. 25

BODMAS: Divide first ($12 \div 4 = 3$), then $24 + 3 - 2 = 25$.

14. 12

Factors of 24: 1, 2, 3, 4, 6, 8, 12, 24. Greatest shared with 36 is 12.

15. 24

Multiples of 6: 6, 12, 18, 24... Multiples of 8: 8, 16, 24... Lowest is 24.

16. $2^3 \times 3^2 \times 5$

Prime factorization: $360 = 36 \times 10 = (2^2 \times 3^2) \times (2 \times 5) = 2^3 \times 3^2 \times 5$.

17. 40

Round each number to 1 sf and evaluate:
 $\frac{50 \times 4}{2^2} = \frac{200}{4} = 50$.

18. 142

Brackets & indices: $3 \times 7^2 - 5 = 3 \times 49 - 5 = 147 - 5 = 142$.

19. 86

Total seats = $8 \times 72 = 576$. Filled = $0.85 \times 576 = 490$. Empty = $576 - 490 = 86$ (or 15% of 576).

20. 4

Numerator: $\sqrt{144} + 64 = \pm 12 + 64 = 52$ or 76. Denominator: $2 \times 7 + 2 = 16$. Therefore answer is $\frac{52}{16} = \frac{13}{4}$ or $\frac{76}{16} = \frac{19}{4}$.