# Foundation GCSE: Squares, Cubes and Roots

Name: _____ Class: _____

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

1. Evaluate $5^2$.
2. Find the value of $3^3$.
3. Calculate $\sqrt{49}$.
4. Work out $\sqrt[3]{8}$.
5. Find the value of $(-4)^2$.
6. Evaluate $(-3)^3$.
7. Calculate $\sqrt{144}$.
8. Work out $\sqrt[3]{-125}$.
9. Evaluate $7^2 + (-2)^3$.
10. Find the value of $6^2 - \sqrt{25}$.
11. Calculate $\sqrt{64} + \sqrt[3]{-27}$.
12. Evaluate $(-5)^3 - 10^2$.
13. Work out the value of $(-2)^3 \times 3^2$.
14. Calculate $\sqrt{196} \div (-\sqrt{4})$.
15. Evaluate $\sqrt{100 - (-36)}$.
16. Find the value of $(2 + 3)^3$.
17. Calculate $\sqrt{81} + \sqrt[3]{-64} \times (-2)^2$.
18. Evaluate $\dfrac{(-6)^2 - 4^2}{\sqrt{25}}$.
19. Work out the exact value of $\sqrt{2.25} \times (-10)^2$.
20. Find the value of $\sqrt[3]{-1\,000} + (-3)^3 - \sqrt{169}$.

# Answers & Worked Solutions

1. 25
   $5^2 = 5 \times 5 = 25$.

2. 27
   $3^3 = 3 \times 3 \times 3 = 27$.

3. 7
   *Since* $7 \times 7 = 49$, $\sqrt{49} = 7$.

4. 2
   *Since* $2 \times 2 \times 2 = 8$, $\sqrt[3]{8} = 2$.

5. 16
   $(-4)^2 = (-4) \times (-4) = 16$.

6. $-27$
   $(-3)^3 = (-3) \times (-3) \times (-3) = -27$.

7. 12
   *Since* $12 \times 12 = 144$, $\sqrt{144} = 12$.

8. $-5$
   *Since* $(-5) \times (-5) \times (-5) = -125$, $\sqrt[3]{-125} = -5$.

9. 41
   $7^2 = 49$ *and* $(-2)^3 = -8$, *so* $49 + (-8) = 41$.

10. 31
    $6^2 = 36$ *and* $\sqrt{25} = 5$, *so* $36 - 5 = 31$.

11. 5
    $\sqrt{64} = 8$ *and* $\sqrt[3]{-27} = -3$, *so* $8 + (-3) = 5$.

12. $-225$
    $(-5)^3 = -125$ *and* $10^2 = 100$, *so* $-125 - 100 = -225$.

13. $-72$
    $(-2)^3 = -8$ *and* $3^2 = 9$, *so* $-8 \times 9 = -72$.

14. $-7$
    $\sqrt{196} = 14$ *and* $-\sqrt{4} = -2$, *so* $14 \div (-2) = -7$.

15. $11.66\ldots$ *(or* $\sqrt{136}$*)*
    $100 - (-36) = 136$, *and* $\sqrt{136} = 2\sqrt{34}$.

16. 125
    $2 + 3 = 5$, *and* $5^3 = 125$.

17. $-7$
    $\sqrt{81} = 9$, $\sqrt[3]{-64} = -4$, $(-2)^2 = 4$, *so* $9 + (-4 \times 4) = 9 - 16 = -7$.

18. 4
    $(-6)^2 = 36$, $4^2 = 16$, *numerator is* 20. $\sqrt{25} = 5$, *so* $20 \div 5 = 4$.

19. 150
    $\sqrt{2.25} = 1.5$, *and* $1.5 \times (-10)^2 = 1.5 \times 100 = 150$.

20. $-50$
    $\sqrt[3]{-1\,000} = -10$, $(-3)^3 = -27$, $\sqrt{169} = 13$, *so* $-10 + (-27) - 13 = -50$.