Exponents and order of operations

Free Extra Maths Class · Grade 7

Name: _____

Remember: $2^3 = 2 \times 2 \times 2$. Order: brackets → exponents and roots → × and ÷ → + and −, each from left to right.
Why? An exponent is a short way to write repeated multiplication. If everyone works in the same order, every sum has one answer.

1. Calculate: 6^2

2. Calculate: 2^5

3. Calculate: $\sqrt{81}$

4. Calculate: $\sqrt[3]{64}$

5. Calculate: $18 + 6 \times 3$

6. Calculate: $40 - 24 \div 4$

7. Calculate: $(15 + 9) \div 6$

8. Calculate: 3×4^2

9. Calculate: $(3 \times 4)^2$

10. Calculate: $50 - 3^2 \times 4$

11. Calculate: $2^3 + 5^2$

12. Calculate: $100 \div (12 - 7) \times 3$

13. Calculate: $\sqrt{(36 + 64)}$

14. True or false? $5 + 3 \times 2 = 16$. Explain.

15. Sipho has R200. He buys 3 notebooks at R25 each and 2 pens at R8 each. Write one number sentence and work out how much money he has left.

I got _____ **out of 15** ☆ ☆ ☆

Memorandum

Exponents and order of operations

Other correct methods are also right.

1. **36**
   6 × 6 = 36

2. **32**
   2 × 2 × 2 × 2 × 2 = 32

3. **9**
   9 × 9 = 81, so √81 = 9

4. **4**
   4 × 4 × 4 = 64, so $\sqrt[3]{64} = 4$

5. **36**
   × first: 6 × 3 = 18; 18 + 18 = 36

6. **34**
   ÷ first: 24 ÷ 4 = 6; 40 − 6 = 34

7. **4**
   brackets first: 15 + 9 = 24; 24 ÷ 6 = 4

8. **48**
   exponent first: $4^2 = 16$; 3 × 16 = 48

9. **144**
   brackets first: 3 × 4 = 12; $12^2 = 12 \times 12 = 144$

10. **14**
    $3^2 = 9$; 9 × 4 = 36; 50 − 36 = 14

11. **33**
    $2^3 = 8$; $5^2 = 25$; 8 + 25 = 33

12. **60**
    12 − 7 = 5; left to right: 100 ÷ 5 = 20; 20 × 3 = 60

13. **10**
    36 + 64 = 100; √100 = 10

14. **False**
    × comes before +: 3 × 2 = 6; 5 + 6 = 11, not 16

15. **R200 − (3 × R25 + 2 × R8) = R109**
    brackets first: 3 × R25 = R75; 2 × R8 = R16; R75 + R16 = R91; R200 − R91 = R109