

Squares and Square Roots

MCQ Test, Set 09

Time: 30 minutes

Maximum marks: 25

Name: _____ Class: _____ Date: _____

- There are 25 questions. Each has exactly one correct answer: choose A, B, C or D.
- Each correct answer carries 1 mark. There is no negative marking.
- The key sheet and worked solutions are at the end of this test.

- c^2 means
 A. $c \times c \times c$ B. $c + 2$ C. $2 \times c$ D. $c \times c$
- The square of 16 is
 A. 225 B. 289 C. 32 D. 256
- Given $27^2 = 729$, using the pattern of the table, $23^2 =$
 A. 529 B. 725 C. 429 D. 46
- $20^2 =$
 A. 4000 B. 40000 C. 400 D. 40
- To find 25^2 by the rule for numbers ending in 5, we first find
 A. $2 + 3$ B. 2×5 C. 2×3 D. 2×2
- Given $176^2 = 30976$, the square root of 30976 is
 A. 15488 B. 176 C. 352 D. $\sqrt{176}$
- $\sqrt{289} =$
 A. 18 B. 16 C. 144.5 D. 17
- The number whose square root is 28 is
 A. 784 B. $\sqrt{28}$ C. 14 D. 56
- $6561 = 3 \times 3 \times 3 \times 3 \times 3 \times 3 \times 3 \times 3$. So $\sqrt{6561} =$
 A. 81 B. 3280.5 C. 243 D. 3
- $\sqrt{3 \times 3 \times 5 \times 5 \times 7 \times 7} =$
 A. 35 B. 105 C. 15 D. 11025
- By the long division method, $\sqrt{1369} =$
 A. 37 B. 27 C. 47 D. 33

12. In finding $\sqrt{2025}$ by the long division method, the first digit of the root is 4. The new divisor starts with
- A. 5 B. 4 C. 16 D. 8
-
13. By the long division method, $\sqrt{121104} =$
- A. 338 B. 358 C. 348 D. 342
-
14. $\sqrt{10} \times \sqrt{90} =$
- A. $\sqrt{100}$ B. 30 C. 900 D. 450
-
15. $(\sqrt{43})^2 =$
- A. 86 B. $\sqrt{43}$ C. 1849 D. 43
-
16. $\frac{\sqrt{117}}{\sqrt{13}} =$
- A. $\sqrt{104}$ B. 3 C. 9 D. 4.5
-
17. $\frac{39}{\sqrt{39}} =$
- A. 39 B. $39\sqrt{39}$ C. $\sqrt{39}$ D. 1
-
18. $\sqrt{144} + \sqrt{1225} =$
- A. 47 B. 37 C. 2209 D. 1369
-
19. For $x > 0$ and $y > 0$, which of these is true?
- A. $\sqrt{x} + \sqrt{y} = \sqrt{x+y}$ B. $\sqrt{x^2 + y^2} = x + y$
 C. $\sqrt{x} - \sqrt{y} = \sqrt{x-y}$ D. $\sqrt{(x+y)^2} = x + y$
-
20. $\sqrt{11^2 + 60^2} =$
- A. 3721 B. 61 C. $\sqrt{71}$ D. 71
-
21. $\sqrt{(9+13)^2} =$
- A. 22 B. $\sqrt{250}$ C. 484 D. 250
-
22. $\sqrt{0.09} =$
- A. 0.03 B. 0.3 C. 3 D. 0.045
-
23. $\sqrt{0.000064} =$
- A. 0.08 B. 0.008 C. 0.0008 D. 0.000032
-
24. $\sqrt{8.41} =$
- A. 29 B. 0.29 C. 2.9 D. 4.205
-
25. $\sqrt{\square} = 9.5$. The number in the box is
- A. 902.5 B. 19 C. 90.25 D. 9.025
-

Key sheet

1. D	2. D	3. A	4. C	5. C
6. B	7. D	8. A	9. A	10. B
11. A	12. D	13. C	14. B	15. D
16. B	17. C	18. A	19. D	20. B
21. A	22. B	23. B	24. C	25. C

Solutions

1. c^2 means

$$a^2 = a \times a$$

So $c^2 = c \times c$ (c multiplied by itself, not by 2).

Ans: (D) $c \times c$

2. The square of 16 is

$$16^2 = 16 \times 16 = 256$$

Ans: (D) 256

3. Given $27^2 = 729$, using the pattern of the table, $23^2 =$

In the table, 24^2 and 26^2 differ by 100, 23^2 and 27^2 by 200, 22^2 and 28^2 by 300, 21^2 and 29^2 by 400.

$$23^2 = 729 - 200 = 529$$

Ans: (A) 529

4. $20^2 =$

$$20^2 = 20 \times 20$$

$$2 \times 2 = 4, \text{ then write two zeros: } 400$$

Ans: (C) 400

5. To find 25^2 by the rule for numbers ending in 5, we first find

Rule: multiply the number before 5 by the next number, then write 25.

$$2 \times 3 = 6, \text{ so } 25^2 = 625$$

Ans: (C) 2×3

6. Given $176^2 = 30976$, the square root of 30976 is

$$a^2 = b \Rightarrow \sqrt{b} = a$$

$$176^2 = 30976 \Rightarrow \sqrt{30976} = 176$$

(The square root is not half the number.)

Ans: (B) 176

7. $\sqrt{289} =$

$$17^2 = 17 \times 17 = 289$$

$$\therefore \sqrt{289} = 17$$

Ans: (D) 17

8. The number whose square root is 28 is

$$\sqrt{b} = a \Rightarrow b = a^2$$

$$28^2 = 28 \times 28 = 784$$

Ans: (A) 784

9. $6561 = 3 \times 3 \times 3 \times 3 \times 3 \times 3 \times 3 \times 3$. So $\sqrt{6561} =$

Take one factor from each pair: $3 \times 3 \times 3 \times 3 = 81$

Ans: (A) 81

10. $\sqrt{3 \times 3 \times 5 \times 5 \times 7 \times 7} =$

$$\sqrt{3 \times 3 \times 5 \times 5 \times 7 \times 7} = \sqrt{(3 \times 3) \times (5 \times 5) \times (7 \times 7)}$$
$$= 3 \times 5 \times 7 = 105$$

Ans: (B) 105

11. By the long division method, $\sqrt{1369} =$

Pairs: $\overline{13} \overline{69}$.

$3 \times 3 = 9 \leq 13$: first digit 3, and $13 - 9 = 4$

Bring down 69: we get 469. New divisor: $3 \times 2 = 6$; $67 \times 7 = 469$ ($68 \times 8 = 544$ is too big); $469 - 469 = 0$

Remainder 0. $\therefore \sqrt{1369} = 37$

Ans: (A) 37

12. In finding $\sqrt{2025}$ by the long division method, the first digit of the root is 4. The new divisor starts with

Double the root found so far: $4 \times 2 = 8$

Then $85 \times 5 = 425$ ($86 \times 6 = 516$ is too big), so $\sqrt{2025} = 45$

Ans: (D) 8

13. By the long division method, $\sqrt{121104} =$

Pair the digits from the right: $\overline{12} \overline{11} \overline{04}$

$3 \times 3 = 9 \leq 12$: first digit 3, and $12 - 9 = 3$

Bring down 11: we get 311. New divisor: $3 \times 2 = 6$; $64 \times 4 = 256$ ($65 \times 5 = 325$ is too big); $311 - 256 = 55$

Bring down 04: we get 5504. New divisor: $34 \times 2 = 68$; $688 \times 8 = 5504$ ($689 \times 9 = 6201$ is too big); $5504 - 5504 = 0$

Remainder 0. $\therefore \sqrt{121104} = 348$

Ans: (C) 348

14. $\sqrt{10} \times \sqrt{90} =$

$$\sqrt{10} \times \sqrt{90} = \sqrt{10 \times 90} = \sqrt{900} = 30$$

Ans: (B) 30

15. $(\sqrt{43})^2 =$

$$(\sqrt{a})^2 = \sqrt{a} \times \sqrt{a} = a$$

$$\therefore (\sqrt{43})^2 = 43$$

Ans: (D) 43

16. $\frac{\sqrt{117}}{\sqrt{13}} =$

$$\frac{\sqrt{117}}{\sqrt{13}} = \sqrt{\frac{117}{13}} = \sqrt{9} = 3$$

Ans: (B) 3

17. $\frac{39}{\sqrt{39}} =$

$$\frac{39}{\sqrt{39}} = \frac{\sqrt{39} \times \sqrt{39}}{\sqrt{39}} = \sqrt{39}$$

Ans: (C) $\sqrt{39}$

18. $\sqrt{144} + \sqrt{1225} =$

$$\sqrt{144} + \sqrt{1225} = 12 + 35 = 47$$

$\sqrt{a} + \sqrt{b} \neq \sqrt{a+b}$, so do not add first.

Ans: (A) 47

19. For $x > 0$ and $y > 0$, which of these is true?

$\sqrt{(x+y)^2} = x+y$ is a property in the notes.

The other three are the 'not equal' rules: $\sqrt{a} + \sqrt{b} \neq \sqrt{a+b}$, $\sqrt{a} - \sqrt{b} \neq \sqrt{a-b}$, $\sqrt{a^2 + b^2} \neq a+b$.

Ans: (D) $\sqrt{(x+y)^2} = x+y$

20. $\sqrt{11^2 + 60^2} =$

$$\sqrt{11^2 + 60^2} = \sqrt{121 + 3600} = \sqrt{3721} = 61$$

$$\sqrt{a^2 + b^2} \neq a+b$$

Ans: (B) 61

21. $\sqrt{(9+13)^2} =$

$$\sqrt{(a+b)^2} = a+b \text{ when } a+b > 0$$

$$\sqrt{(9+13)^2} = \sqrt{22^2} = 22$$

Ans: (A) 22

22. $\sqrt{0.09} =$

$$\sqrt{0.09} = \sqrt{\frac{9}{100}}$$

$$= \frac{\sqrt{9}}{\sqrt{100}}$$

$$= \frac{3}{10}$$

$$= 0.3$$

Ans: (B) 0.3

23. $\sqrt{0.000064} =$

$$\sqrt{0.000064} = \sqrt{\frac{64}{1000000}}$$

$$= \frac{\sqrt{64}}{\sqrt{1000000}}$$

$$= \frac{8}{1000}$$

$$= 0.008$$

Ans: (B) 0.008

24. $\sqrt{8.41} =$

$$\sqrt{8.41} = \sqrt{\frac{841}{100}} = \frac{\sqrt{841}}{\sqrt{100}} = \frac{29}{10} = 2.9$$

Ans: (C) 2.9

25. $\sqrt{\square} = 9.5$. The number in the box is

$$9.5 = \frac{95}{10}$$

$$\left(\frac{95}{10}\right)^2 = \frac{9025}{100} = 90.25$$

$$\text{Check: } \sqrt{90.25} = \frac{\sqrt{9025}}{\sqrt{100}} = 9.5$$

Ans: (C) 90.25
