

Squares and Square Roots

MCQ Test, Set 01

Time: 30 minutes

Maximum marks: 25

Name: _____ Class: _____ Date: _____

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

1. b^2 means

- A.** $b + 2$ **B.** $2 \times b$ **C.** $b \times b$ **D.** $b \times b \times b$

2. The square of 11 is

- A.** 121 **B.** 100 **C.** 22 **D.** 144

3. The next number in 49, 64, 81, ... is

- A.** 99 **B.** 121 **C.** 98 **D.** 100

4. $80^2 =$

- A.** 64000 **B.** 640 **C.** 160 **D.** 6400

5. To find 75^2 by the rule for numbers ending in 5, we first find

- A.** 7×5 **B.** 7×8 **C.** 7×7 **D.** $7 + 8$

6. Given $118^2 = 13924$, the square root of 13924 is

- A.** 6962 **B.** 236 **C.** $\sqrt{118}$ **D.** 118

7. $\sqrt{729} =$

- A.** 26 **B.** 28 **C.** 27 **D.** 364.5

8. The number whose square root is 26 is

- A.** 676 **B.** $\sqrt{26}$ **C.** 13 **D.** 52

9. $576 = 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 3 \times 3$. So $\sqrt{576} =$

- A.** 24 **B.** 288 **C.** 6 **D.** 48

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

- A.** 7 **B.** 10 **C.** 441 **D.** 21

11. By the long division method, $\sqrt{6889} =$

- A.** 83 **B.** 93 **C.** 73 **D.** 87

12. In finding $\sqrt{5776}$ by the long division method, the first digit of the root is 7. The new divisor starts with
- A. 14 B. 49 C. 7 D. 8
-
13. In finding $\sqrt{45369}$ by the long division method, the first digit of the root is
- A. 6 B. 2 C. 4 D. 3
-
14. $\sqrt{12} \times \sqrt{3} =$
- A. $\sqrt{15}$ B. 6 C. 36 D. 18
-
15. $(\sqrt{29})^2 =$
- A. 841 B. $\sqrt{29}$ C. 29 D. 58
-
16. $\frac{\sqrt{80}}{\sqrt{5}} =$
- A. $\sqrt{75}$ B. 16 C. 8 D. 4
-
17. $\frac{23}{\sqrt{23}} =$
- A. 1 B. 23 C. $\sqrt{23}$ D. $23\sqrt{23}$
-
18. $\sqrt{36} + \sqrt{64} =$
- A. 10 B. 100 C. 14 D. 196
-
19. For $m > 0$ and $n > 0$, which of these is true?
- A. $\sqrt{m^2 + n^2} = m + n$ B. $\sqrt{m} \times \sqrt{n} = \sqrt{m \times n}$
C. $\sqrt{m} - \sqrt{n} = \sqrt{m - n}$ D. $\sqrt{m} + \sqrt{n} = \sqrt{m + n}$
-
20. $\sqrt{9^2 + 12^2} =$
- A. 225 B. 15 C. $\sqrt{21}$ D. 21
-
21. $\sqrt{(17 - 9)^2} =$
- A. $\sqrt{208}$ B. 208 C. 8 D. 64
-
22. $\sqrt{0.49} =$
- A. 0.7 B. 0.07 C. 0.245 D. 7
-
23. $\sqrt{0.000009} =$
- A. 0.0000045 B. 0.003 C. 0.03 D. 0.0003
-
24. $\sqrt{5.29} =$
- A. 0.23 B. 2.645 C. 23 D. 2.3
-
25. $\sqrt{\square} = 5.5$. The number in the box is
- A. 302.5 B. 11 C. 30.25 D. 3.025
-

Key sheet

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

Solutions

1. b^2 means

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

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

Ans: (C) $b \times b$

2. The square of 11 is

$$11^2 = 11 \times 11 = 121$$

Ans: (A) 121

3. The next number in 49, 64, 81, ... is

These are $7^2, 8^2, 9^2$.

Next is $10^2 = 100$

Ans: (D) 100

4. $80^2 =$

$$80^2 = 80 \times 80$$

$8 \times 8 = 64$, then write two zeros: 6400

Ans: (D) 6400

5. To find 75^2 by the rule for numbers ending in 5, we first find

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

$$7 \times 8 = 56, \text{ so } 75^2 = 5625$$

Ans: (B) 7×8

6. Given $118^2 = 13924$, the square root of 13924 is

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

$$118^2 = 13924 \Rightarrow \sqrt{13924} = 118$$

(The square root is not half the number.)

Ans: (D) 118

7. $\sqrt{729} =$

$$27^2 = 27 \times 27 = 729$$

$$\therefore \sqrt{729} = 27$$

Ans: (C) 27

8. The number whose square root is 26 is

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

$$26^2 = 26 \times 26 = 676$$

Ans: (A) 676

9. $576 = 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 3 \times 3$. So $\sqrt{576} =$

Take one factor from each pair: $2 \times 2 \times 2 \times 3 = 24$

Ans: (A) 24

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

$$\sqrt{3 \times 3 \times 7 \times 7} = \sqrt{(3 \times 3) \times (7 \times 7)}$$
$$= 3 \times 7 = 21$$

Ans: (D) 21

11. By the long division method, $\sqrt{6889} =$

Pairs: $\overline{68} \overline{89}$.

$$8 \times 8 = 64 \leq 68: \text{ first digit 8, and } 68 - 64 = 4$$

Bring down 89: we get 489. New divisor: $8 \times 2 = 16$; $163 \times 3 = 489$ ($164 \times 4 = 656$ is too big); $489 - 489 = 0$

Remainder 0. $\therefore \sqrt{6889} = 83$

Ans: (A) 83

12. In finding $\sqrt{5776}$ by the long division method, the first digit of the root is 7. The new divisor starts with

$$\text{Double the root found so far: } 7 \times 2 = 14$$

Then $146 \times 6 = 876$ ($147 \times 7 = 1029$ is too big), so $\sqrt{5776} = 76$

Ans: (A) 14

13. In finding $\sqrt{45369}$ by the long division method, the first digit of the root is

Pair from the right: $\overline{4} \overline{53} \overline{69}$; the first group is 4.

$$2 \times 2 = 4 \leq 4, \text{ so the first digit is 2}$$

Ans: (B) 2

14. $\sqrt{12} \times \sqrt{3} =$

$$\sqrt{12} \times \sqrt{3} = \sqrt{12 \times 3} = \sqrt{36} = 6$$

Ans: (B) 6

15. $(\sqrt{29})^2 =$

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

$$\therefore (\sqrt{29})^2 = 29$$

Ans: (C) 29

16. $\frac{\sqrt{80}}{\sqrt{5}} =$

$$\frac{\sqrt{80}}{\sqrt{5}} = \sqrt{\frac{80}{5}} = \sqrt{16} = 4$$

Ans: (D) 4

17. $\frac{23}{\sqrt{23}} =$
 $\frac{23}{\sqrt{23}} = \frac{\sqrt{23} \times \sqrt{23}}{\sqrt{23}} = \sqrt{23}$
Ans: (C) $\sqrt{23}$

18. $\sqrt{36} + \sqrt{64} =$
 $\sqrt{36} + \sqrt{64} = 6 + 8 = 14$
 $\sqrt{a} + \sqrt{b} \neq \sqrt{a+b}$, so do not add first.
Ans: (C) 14

19. For $m > 0$ and $n > 0$, which of these is true?
 $\sqrt{m} \times \sqrt{n} = \sqrt{m \times n}$ 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: (B) $\sqrt{m} \times \sqrt{n} = \sqrt{m \times n}$

20. $\sqrt{9^2 + 12^2} =$
 $\sqrt{9^2 + 12^2} = \sqrt{81 + 144} = \sqrt{225} = 15$
 $\sqrt{a^2 + b^2} \neq a + b$
Ans: (B) 15

21. $\sqrt{(17-9)^2} =$
 $\sqrt{(a-b)^2} = a-b$ when $a-b > 0$
 $\sqrt{(17-9)^2} = \sqrt{8^2} = 8$
Ans: (C) 8

22. $\sqrt{0.49} =$
 $\sqrt{0.49} = \sqrt{\frac{49}{100}}$
 $= \frac{\sqrt{49}}{\sqrt{100}}$
 $= \frac{7}{10}$
 $= 0.7$
Ans: (A) 0.7

23. $\sqrt{0.000009} =$
 $\sqrt{0.000009} = \sqrt{\frac{9}{1000000}}$
 $= \frac{\sqrt{9}}{\sqrt{1000000}}$
 $= \frac{3}{1000}$
 $= 0.003$
Ans: (B) 0.003

24. $\sqrt{5.29} =$
 $\sqrt{5.29} = \sqrt{\frac{529}{100}} = \frac{\sqrt{529}}{\sqrt{100}} = \frac{23}{10} = 2.3$
Ans: (D) 2.3

25. $\sqrt{\square} = 5.5$. The number in the box is

$$5.5 = \frac{55}{10}$$

$$\left(\frac{55}{10}\right)^2 = \frac{3025}{100} = 30.25$$

$$\text{Check: } \sqrt{30.25} = \frac{\sqrt{3025}}{\sqrt{100}} = 5.5$$

Ans: (C) 30.25
