

Squares and Square Roots

MCQ Test, Set 05

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. Which of these is equal to 56×56 ?

- A. 2^{56} B. 56^2 C. 2×56 D. 56^3

2. The square of 24 is

- A. 625 B. 48 C. 529 D. 576

3. Given $28^2 = 784$, using the pattern of the table, $22^2 =$

- A. 778 B. 44 C. 384 D. 484

4. $40^2 =$

- A. 1600 B. 80 C. 16000 D. 160

5. To find 65^2 by the rule for numbers ending in 5, we first find

- A. 6×5 B. 6×7 C. 6×6 D. $6 + 7$

6. Given $142^2 = 20164$, the square root of 20164 is

- A. $\sqrt{142}$ B. 284 C. 10082 D. 142

7. $\sqrt{144} =$

- A. 11 B. 72 C. 12 D. 13

8. The number whose square root is 25 is

- A. 12.5 B. 50 C. $\sqrt{25}$ D. 625

9. $5625 = 3 \times 3 \times 5 \times 5 \times 5 \times 5$. So $\sqrt{5625} =$

- A. 2812.5 B. 75 C. 15 D. 225

10. $\sqrt{2 \times 2 \times 13 \times 13} =$

- A. 26 B. 15 C. 676 D. 13

11. By the long division method, $\sqrt{7569} =$

- A. 77 B. 87 C. 97 D. 83

12. In finding $\sqrt{2401}$ by the long division method, the first digit of the root is 4. The new divisor starts with
- A. 8 B. 5 C. 4 D. 16
-
13. The square root of 145161 has how many digits?
- A. 2 B. 6 C. 4 D. 3
-
14. $\sqrt{6} \times \sqrt{150} =$
- A. 30 B. $\sqrt{156}$ C. 900 D. 450
-
15. $(\sqrt{37})^2 =$
- A. $\sqrt{37}$ B. 74 C. 1369 D. 37
-
16. $\frac{\sqrt{112}}{\sqrt{7}} =$
- A. 8 B. $\sqrt{105}$ C. 4 D. 16
-
17. $\frac{33}{\sqrt{33}} =$
- A. $33\sqrt{33}$ B. 1 C. $\sqrt{33}$ D. 33
-
18. $\sqrt{64} + \sqrt{9} =$
- A. 73 B. 11 C. 121 D. $\sqrt{73}$
-
19. For $p > 0$ and $q > 0$, which of these is true?
- A. $\sqrt{p} + \sqrt{q} = \sqrt{p+q}$ B. $\sqrt{p^2 + q^2} = p + q$
C. $\frac{\sqrt{p}}{\sqrt{q}} = \sqrt{\frac{p}{q}}$ D. $\sqrt{p} - \sqrt{q} = \sqrt{p-q}$
-
20. $\sqrt{16^2 + 30^2} =$
- A. 34 B. 1156 C. $\sqrt{46}$ D. 46
-
21. $\sqrt{(20-13)^2} =$
- A. 7 B. 49 C. $\sqrt{231}$ D. 231
-
22. $\sqrt{0.16} =$
- A. 4 B. 0.04 C. 0.4 D. 0.08
-
23. $\sqrt{0.000081} =$
- A. 0.0009 B. 0.09 C. 0.009 D. 0.0000405
-
24. $\sqrt{2.25} =$
- A. 1.125 B. 1.5 C. 15 D. 0.15
-
25. $\sqrt{\square} = 1.8$. The number in the box is
- A. 32.4 B. 3.24 C. 0.324 D. 3.6
-

Key sheet

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

Solutions

1. Which of these is equal to 56×56 ?

56 is multiplied by itself 2 times.

$$\therefore 56 \times 56 = 56^2$$

Ans: (B) 56^2

2. The square of 24 is

$$24^2 = 24 \times 24 = 576$$

Ans: (D) 576

3. Given $28^2 = 784$, using the pattern of the table, $22^2 =$

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.

$$22^2 = 784 - 300 = 484$$

Ans: (D) 484

4. $40^2 =$

$$40^2 = 40 \times 40$$

$$4 \times 4 = 16, \text{ then write two zeros: } 1600$$

Ans: (A) 1600

5. To find 65^2 by the rule for numbers ending in 5, we first find

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

$$6 \times 7 = 42, \text{ so } 65^2 = 4225$$

Ans: (B) 6×7

6. Given $142^2 = 20164$, the square root of 20164 is

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

$$142^2 = 20164 \Rightarrow \sqrt{20164} = 142$$

(The square root is not half the number.)

Ans: (D) 142

7. $\sqrt{144} =$

$$12^2 = 12 \times 12 = 144$$

$$\therefore \sqrt{144} = 12$$

Ans: (C) 12

8. The number whose square root is 25 is

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

$$25^2 = 25 \times 25 = 625$$

Ans: (D) 625

9. $5625 = 3 \times 3 \times 5 \times 5 \times 5 \times 5$. So $\sqrt{5625} =$

Take one factor from each pair: $3 \times 5 \times 5 = 75$

Ans: (B) 75

10. $\sqrt{2 \times 2 \times 13 \times 13} =$

$$\sqrt{2 \times 2 \times 13 \times 13} = \sqrt{(2 \times 2) \times (13 \times 13)} \\ = 2 \times 13 = 26$$

Ans: (A) 26

11. By the long division method, $\sqrt{7569} =$

Pairs: $\overline{75} \overline{69}$.

$8 \times 8 = 64 \leq 75$: first digit 8, and $75 - 64 = 11$

Bring down 69: we get 1169. New divisor: $8 \times 2 = 16$; $167 \times 7 = 1169$ ($168 \times 8 = 1344$ is too big);
 $1169 - 1169 = 0$

Remainder 0. $\therefore \sqrt{7569} = 87$

Ans: (B) 87

12. In finding $\sqrt{2401}$ 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 $89 \times 9 = 801$, so $\sqrt{2401} = 49$

Ans: (A) 8

13. The square root of 145161 has how many digits?

Pairs from the right: $\overline{14} \overline{51} \overline{61}$, that is 3 groups.

One digit of the root for each group: $\sqrt{145161} = 381$

Ans: (D) 3

14. $\sqrt{6} \times \sqrt{150} =$

$$\sqrt{6} \times \sqrt{150} = \sqrt{6 \times 150} = \sqrt{900} = 30$$

Ans: (A) 30

15. $(\sqrt{37})^2 =$

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

$$\therefore (\sqrt{37})^2 = 37$$

Ans: (D) 37

16. $\frac{\sqrt{112}}{\sqrt{7}} =$

$$\frac{\sqrt{112}}{\sqrt{7}} = \sqrt{\frac{112}{7}} = \sqrt{16} = 4$$

Ans: (C) 4

17. $\frac{33}{\sqrt{33}} =$
 $\frac{33}{\sqrt{33}} = \frac{\sqrt{33} \times \sqrt{33}}{\sqrt{33}} = \sqrt{33}$
Ans: (C) $\sqrt{33}$

18. $\sqrt{64} + \sqrt{9} =$
 $\sqrt{64} + \sqrt{9} = 8 + 3 = 11$
 $\sqrt{a} + \sqrt{b} \neq \sqrt{a+b}$, so do not add first.
Ans: (B) 11

19. For $p > 0$ and $q > 0$, which of these is true?
 $\frac{\sqrt{p}}{\sqrt{q}} = \sqrt{\frac{p}{q}}$ 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: (C) $\frac{\sqrt{p}}{\sqrt{q}} = \sqrt{\frac{p}{q}}$

20. $\sqrt{16^2 + 30^2} =$
 $\sqrt{16^2 + 30^2} = \sqrt{256 + 900} = \sqrt{1156} = 34$
 $\sqrt{a^2 + b^2} \neq a + b$
Ans: (A) 34

21. $\sqrt{(20 - 13)^2} =$
 $\sqrt{(a - b)^2} = a - b$ when $a - b > 0$
 $\sqrt{(20 - 13)^2} = \sqrt{7^2} = 7$
Ans: (A) 7

22. $\sqrt{0.16} =$
 $\sqrt{0.16} = \sqrt{\frac{16}{100}}$
 $= \frac{\sqrt{16}}{\sqrt{100}}$
 $= \frac{4}{10}$
 $= 0.4$
Ans: (C) 0.4

23. $\sqrt{0.000081} =$
 $\sqrt{0.000081} = \sqrt{\frac{81}{1000000}}$
 $= \frac{\sqrt{81}}{\sqrt{1000000}}$
 $= \frac{9}{1000}$
 $= 0.009$
Ans: (C) 0.009

24. $\sqrt{2.25} =$
 $\sqrt{2.25} = \sqrt{\frac{225}{100}} = \frac{\sqrt{225}}{\sqrt{100}} = \frac{15}{10} = 1.5$
Ans: (B) 1.5

25. $\sqrt{\square} = 1.8$. The number in the box is

$$1.8 = \frac{18}{10}$$

$$\left(\frac{18}{10}\right)^2 = \frac{324}{100} = 3.24$$

$$\text{Check: } \sqrt{3.24} = \frac{\sqrt{324}}{\sqrt{100}} = 1.8$$

Ans: (B) 3.24
