

Squares and Square Roots

MCQ Test, Set 10

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.

1. Which of these is equal to 78×78 ?

- A. 2×78 B. 78^2 C. 2^{78} D. 78^3

2. The square of 21 is

- A. 400 B. 42 C. 441 D. 484

3. The next number in 676, 729, 784, ... is

- A. 840 B. 900 C. 839 D. 841

4. $100^2 =$

- A. 100000 B. 1000 C. 200 D. 10000

5. $115^2 = \square 25$. The number in the box is

- A. 144 B. 121 C. 132 D. 23

6. If $189^2 = 35721$, then $\sqrt{35721} =$

- A. 17860.5 B. 378 C. 189 D. $\sqrt{189}$

7. $\sqrt{121} =$

- A. 11 B. 10 C. 60.5 D. 12

8. $\sqrt{\square} = 16$. The number in the box is

- A. 256 B. $\sqrt{16}$ C. 32 D. 8

9. $4096 = 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2$. So $\sqrt{4096} =$

- A. 128 B. 64 C. 2048 D. 2

10. $\sqrt{5 \times 5 \times 13 \times 13} =$

- A. 65 B. 18 C. 4225 D. 13

11. By the long division method, $\sqrt{1681} =$

- A. 41 B. 49 C. 51 D. 31

12.	While finding $\sqrt{7569}$ by long division, the first digit of the root is 8. The next divisor begins with	A. 8	B. 9	C. 16	D. 64
13.	In finding $\sqrt{29584}$ by the long division method, the first digit of the root is	A. 2	B. 1	C. 5	D. 3
14.	$\sqrt{6} \times \sqrt{96} =$	A. 576	B. 288	C. $\sqrt{102}$	D. 24
15.	$(\sqrt{34})^2 =$	A. 34	B. $\sqrt{34}$	C. 1156	D. 68
16.	$\frac{\sqrt{72}}{\sqrt{2}} =$	A. $\sqrt{70}$	B. 36	C. 6	D. 18
17.	$\frac{42}{\sqrt{42}} =$	A. $42\sqrt{42}$	B. 1	C. 42	D. $\sqrt{42}$
18.	$\sqrt{16} + \sqrt{81} =$	A. $\sqrt{97}$	B. 13	C. 169	D. 97
19.	$\sqrt{900} - \sqrt{576} =$	A. 6	B. 324	C. 54	D. 18
20.	$\sqrt{12^2 + 35^2} =$	A. 47	B. 1369	C. 37	D. $\sqrt{47}$
21.	$\sqrt{(23 - 8)^2} =$	A. $\sqrt{465}$	B. 15	C. 225	D. 465
22.	$\sqrt{0.36} =$	A. 6	B. 0.18	C. 0.06	D. 0.6
23.	$\sqrt{0.0729}$ written as a fraction is	A. $\frac{729}{100}$	B. $\frac{27}{10}$	C. $\frac{27}{100}$	D. $\frac{27}{1000}$
24.	$\sqrt{7.84} =$	A. 0.28	B. 3.92	C. 28	D. 2.8
25.	$\sqrt{\square} = 4.5$. The number in the box is	A. 9	B. 20.25	C. 202.5	D. 2.025

Key sheet

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

Solutions

1. Which of these is equal to 78×78 ?

78 is multiplied by itself 2 times.

$$\therefore 78 \times 78 = 78^2$$

Ans: (B) 78^2

2. The square of 21 is

$$21^2 = 21 \times 21 = 441$$

Ans: (C) 441

3. The next number in 676, 729, 784, ... is

These are $26^2, 27^2, 28^2$.

Next is $29^2 = 841$

Ans: (D) 841

4. $100^2 =$

$$100^2 = 100 \times 100$$

$10 \times 10 = 100$, then write two zeros: 10000

Ans: (D) 10000

5. $115^2 = \square 25$. The number in the box is

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

$$11 \times 12 = 132, \text{ so } 115^2 = 13225$$

Ans: (C) 132

6. If $189^2 = 35721$, then $\sqrt{35721} =$

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

$$189^2 = 35721 \Rightarrow \sqrt{35721} = 189$$

(The square root is not half the number.)

Ans: (C) 189

7. $\sqrt{121} =$

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

$$\therefore \sqrt{121} = 11$$

Ans: (A) 11

8. $\sqrt{\square} = 16$. The number in the box is

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

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

Ans: (A) 256

9. $4096 = 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2$. So $\sqrt{4096} =$

Take one factor from each pair: $2 \times 2 \times 2 \times 2 \times 2 \times 2 = 64$

Ans: (B) 64

10. $\sqrt{5 \times 5 \times 13 \times 13} =$

$$\sqrt{5 \times 5 \times 13 \times 13} = \sqrt{(5 \times 5) \times (13 \times 13)}$$
$$= 5 \times 13 = 65$$

Ans: (A) 65

11. By the long division method, $\sqrt{1681} =$

Pairs: $\overline{16} \overline{81}$.

$$4 \times 4 = 16 \leq 16: \text{ first digit } 4, \text{ and } 16 - 16 = 0$$

Bring down 81: we get 81. New divisor: $4 \times 2 = 8$; $81 \div 8 = 10$ ($8 \times 10 = 80$ is too big); $81 - 80 = 1$

Remainder 0. $\therefore \sqrt{1681} = 41$

Ans: (A) 41

12. While finding $\sqrt{7569}$ by long division, the first digit of the root is 8. The next divisor begins with

$$\text{Double the root found so far: } 8 \times 2 = 16$$

$$\text{Then } 167 \times 7 = 1169 \text{ (} 168 \times 8 = 1344 \text{ is too big), so } \sqrt{7569} = 87$$

Ans: (C) 16

13. In finding $\sqrt{29584}$ by the long division method, the first digit of the root is

Pair from the right: $\overline{2} \overline{95} \overline{84}$; the first group is 2.

$$1 \times 1 = 1 \leq 2, \text{ so the first digit is } 1$$

Ans: (B) 1

14. $\sqrt{6} \times \sqrt{96} =$

$$\sqrt{6} \times \sqrt{96} = \sqrt{6 \times 96} = \sqrt{576} = 24$$

Ans: (D) 24

15. $(\sqrt{34})^2 =$

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

$$\therefore (\sqrt{34})^2 = 34$$

Ans: (A) 34

16. $\frac{\sqrt{72}}{\sqrt{2}} =$

$$\frac{\sqrt{72}}{\sqrt{2}} = \sqrt{\frac{72}{2}} = \sqrt{36} = 6$$

Ans: (C) 6

17. $\frac{42}{\sqrt{42}} =$

$$\frac{42}{\sqrt{42}} = \frac{\sqrt{42} \times \sqrt{42}}{\sqrt{42}} = \sqrt{42}$$

Ans: (D) $\sqrt{42}$

18. $\sqrt{16} + \sqrt{81} =$

$$\sqrt{16} + \sqrt{81} = 4 + 9 = 13$$

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

Ans: (B) 13

19. $\sqrt{900} - \sqrt{576} =$

$$\sqrt{900} - \sqrt{576} = 30 - 24 = 6$$

$\sqrt{a} - \sqrt{b} \neq \sqrt{a-b}$, so do not subtract first.

Ans: (A) 6

20. $\sqrt{12^2 + 35^2} =$

$$\sqrt{12^2 + 35^2} = \sqrt{144 + 1225} = \sqrt{1369} = 37$$

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

Ans: (C) 37

21. $\sqrt{(23 - 8)^2} =$

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

$$\sqrt{(23 - 8)^2} = \sqrt{15^2} = 15$$

Ans: (B) 15

22. $\sqrt{0.36} =$

$$\sqrt{0.36} = \sqrt{\frac{36}{100}}$$

$$= \frac{\sqrt{36}}{\sqrt{100}}$$

$$= \frac{6}{10}$$

$$= 0.6$$

Ans: (D) 0.6

23. $\sqrt{0.0729}$ written as a fraction is

$$\sqrt{0.0729} = \sqrt{\frac{729}{10000}} = \frac{\sqrt{729}}{\sqrt{10000}} = \frac{27}{100}$$

Ans: (C) $\frac{27}{100}$

24. $\sqrt{7.84} =$

$$\sqrt{7.84} = \sqrt{\frac{784}{100}} = \frac{\sqrt{784}}{\sqrt{100}} = \frac{28}{10} = 2.8$$

Ans: (D) 2.8

25. $\sqrt{\square} = 4.5$. The number in the box is

$$4.5 = \frac{45}{10}$$

$$\left(\frac{45}{10}\right)^2 = \frac{2025}{100} = 20.25$$

$$\text{Check: } \sqrt{20.25} = \frac{\sqrt{2025}}{\sqrt{100}} = 4.5$$

Ans: (B) 20.25
