

Squares and Square Roots

MCQ Test, Set 04

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. x^2 is read as
A. '2 times x ' **B.** ' x cubed' **C.** ' x squared' **D.** ' x plus 2'
2. Which of these is not a perfect square?
A. 784 **B.** 494 **C.** 169 **D.** 484
3. The next number in 225, 256, 289, ... is
A. 322 **B.** 361 **C.** 324 **D.** 323
4. $90^2 =$
A. 81000 **B.** 8100 **C.** 810 **D.** 180
5. $55^2 = \square 25$. The number in the box is
A. 25 **B.** 11 **C.** 36 **D.** 30
6. If $137^2 = 18769$, then $\sqrt{18769} =$
A. 274 **B.** $\sqrt{137}$ **C.** 9384.5 **D.** 137
7. $\sqrt{841} =$
A. 28 **B.** 30 **C.** 29 **D.** 420.5
8. $\sqrt{\square} = 11$. The number in the box is
A. 22 **B.** $\sqrt{11}$ **C.** 5.5 **D.** 121
9. $2025 = 3 \times 3 \times 3 \times 3 \times 5 \times 5$. So $\sqrt{2025} =$
A. 45 **B.** 135 **C.** 15 **D.** 1012.5
10. In the prime factorization method, from each pair of equal prime factors we take
A. one factor **B.** no factor
C. both factors **D.** the sum of the two factors
11. By the long division method, $\sqrt{1849} =$
A. 47 **B.** 53 **C.** 33 **D.** 43

12.	While finding $\sqrt{9025}$ by long division, the first digit of the root is 9. The next divisor begins with	A. 18	B. 9	C. 10	D. 81
13.	In finding $\sqrt{60516}$ by the long division method, the first digit of the root is	A. 3	B. 7	C. 2	D. 6
14.	$\sqrt{7} \times \sqrt{63} =$	A. $\sqrt{70}$	B. 21	C. 220.5	D. 441
15.	$(\sqrt{22})^2 =$	A. 22	B. 44	C. 484	D. $\sqrt{22}$
16.	$\frac{\sqrt{150}}{\sqrt{6}} =$	A. 25	B. 12.5	C. $\sqrt{144}$	D. 5
17.	$\frac{31}{\sqrt{31}} =$	A. 31	B. $\sqrt{31}$	C. 1	D. $31\sqrt{31}$
18.	$\sqrt{4} + \sqrt{81} =$	A. 121	B. 85	C. 11	D. $\sqrt{85}$
19.	$\sqrt{625} - \sqrt{49} =$	A. 24	B. 576	C. 18	D. 32
20.	$\sqrt{10^2 + 24^2} =$	A. 34	B. 676	C. $\sqrt{34}$	D. 26
21.	$\sqrt{(8+9)^2} =$	A. 145	B. 17	C. 289	D. $\sqrt{145}$
22.	$\sqrt{0.0009} =$	A. 0.03	B. 0.3	C. 0.003	D. 0.00045
23.	$\sqrt{0.0225}$ written as a fraction is	A. $\frac{15}{100}$	B. $\frac{225}{100}$	C. $\frac{15}{1000}$	D. $\frac{15}{10}$
24.	$\sqrt{2.89} =$	A. 17	B. 1.445	C. 1.7	D. 0.17
25.	$\sqrt{\square} = 6.5$. The number in the box is	A. 4.225	B. 42.25	C. 13	D. 422.5

Key sheet

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

Solutions

1. x^2 is read as

$x^2 = x \times x$ is read as ' x squared' (or) ' x power 2'.

Ans: (C) ' x squared'

2. Which of these is not a perfect square?

$169 = 13^2$, $484 = 22^2$, $784 = 28^2$, so they are perfect squares.

494 is not in the table of squares.

Ans: (B) 494

3. The next number in 225, 256, 289, ... is

These are $15^2, 16^2, 17^2$.

Next is $18^2 = 324$

Ans: (C) 324

4. $90^2 =$

$90^2 = 90 \times 90$

$9 \times 9 = 81$, then write two zeros: 8100

Ans: (B) 8100

5. $55^2 = \square 25$. The number in the box is

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

$5 \times 6 = 30$, so $55^2 = 3025$

Ans: (D) 30

6. If $137^2 = 18769$, then $\sqrt{18769} =$

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

$137^2 = 18769 \Rightarrow \sqrt{18769} = 137$

(The square root is not half the number.)

Ans: (D) 137

7. $\sqrt{841} =$

$29^2 = 29 \times 29 = 841$

$\therefore \sqrt{841} = 29$

Ans: (C) 29

8. $\sqrt{\square} = 11$. The number in the box is

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

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

Ans: (D) 121

9. $2025 = 3 \times 3 \times 3 \times 3 \times 5 \times 5$. So $\sqrt{2025} =$

Take one factor from each pair: $3 \times 3 \times 5 = 45$

Ans: (A) 45

10. In the prime factorization method, from each pair of equal prime factors we take

$\sqrt{2 \times 2} = 2$: each pair gives one factor to the square root.

Ans: (A) one factor

11. By the long division method, $\sqrt{1849} =$

Pairs: $\overline{18} \overline{49}$.

$4 \times 4 = 16 \leq 18$: first digit 4, and $18 - 16 = 2$

Bring down 49: we get 249. New divisor: $4 \times 2 = 8$; $83 \times 3 = 249$ ($84 \times 4 = 336$ is too big); $249 - 249 = 0$

Remainder 0. $\therefore \sqrt{1849} = 43$

Ans: (D) 43

12. While finding $\sqrt{9025}$ by long division, the first digit of the root is 9. The next divisor begins with

Double the root found so far: $9 \times 2 = 18$

Then $185 \times 5 = 925$ ($186 \times 6 = 1116$ is too big), so $\sqrt{9025} = 95$

Ans: (A) 18

13. In finding $\sqrt{60516}$ by the long division method, the first digit of the root is

Pair from the right: $\overline{6} \overline{05} \overline{16}$; the first group is 6.

$2 \times 2 = 4 \leq 6$, so the first digit is 2

Ans: (C) 2

14. $\sqrt{7} \times \sqrt{63} =$

$$\sqrt{7} \times \sqrt{63} = \sqrt{7 \times 63} = \sqrt{441} = 21$$

Ans: (B) 21

15. $(\sqrt{22})^2 =$

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

$$\therefore (\sqrt{22})^2 = 22$$

Ans: (A) 22

16. $\frac{\sqrt{150}}{\sqrt{6}} =$

$$\frac{\sqrt{150}}{\sqrt{6}} = \sqrt{\frac{150}{6}} = \sqrt{25} = 5$$

Ans: (D) 5

17. $\frac{31}{\sqrt{31}} =$

$$\frac{31}{\sqrt{31}} = \frac{\sqrt{31} \times \sqrt{31}}{\sqrt{31}} = \sqrt{31}$$

Ans: (B) $\sqrt{31}$

18. $\sqrt{4} + \sqrt{81} =$

$$\sqrt{4} + \sqrt{81} = 2 + 9 = 11$$

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

Ans: (C) 11

19. $\sqrt{625} - \sqrt{49} =$

$$\sqrt{625} - \sqrt{49} = 25 - 7 = 18$$

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

Ans: (C) 18

20. $\sqrt{10^2 + 24^2} =$

$$\sqrt{10^2 + 24^2} = \sqrt{100 + 576} = \sqrt{676} = 26$$

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

Ans: (D) 26

21. $\sqrt{(8+9)^2} =$

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

$$\sqrt{(8+9)^2} = \sqrt{17^2} = 17$$

Ans: (B) 17

22. $\sqrt{0.0009} =$

$$\sqrt{0.0009} = \sqrt{\frac{9}{10000}}$$

$$= \frac{\sqrt{9}}{\sqrt{10000}}$$

$$= \frac{3}{100}$$

$$= 0.03$$

Ans: (A) 0.03

23. $\sqrt{0.0225}$ written as a fraction is

$$\sqrt{0.0225} = \sqrt{\frac{225}{10000}} = \frac{\sqrt{225}}{\sqrt{10000}} = \frac{15}{100}$$

Ans: (A) $\frac{15}{100}$

24. $\sqrt{2.89} =$

$$\sqrt{2.89} = \sqrt{\frac{289}{100}} = \frac{\sqrt{289}}{\sqrt{100}} = \frac{17}{10} = 1.7$$

Ans: (C) 1.7

25. $\sqrt{\square} = 6.5$. The number in the box is

$$6.5 = \frac{65}{10}$$

$$\left(\frac{65}{10}\right)^2 = \frac{4225}{100} = 42.25$$

$$\text{Check: } \sqrt{42.25} = \frac{\sqrt{4225}}{\sqrt{100}} = 6.5$$

Ans: (B) 42.25
