EXPRESSWALA ACADEMY

Squares and Square Roots

MCQ Test, Set 03

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. n^2 means

A. $2 \times n$ **B.** $n \times n$ **C.** $n \times n \times n$ **D.** $n + 2$

2. The square of 18 is

A. 361 **B.** 36 **C.** 289 **D.** 324

3. The next number in $121, 144, 169, \ldots$ is

A. 195 **B.** 196 **C.** 194 **D.** 225

4. $60^2 =$

A. 3600 **B.** 120 **C.** 36000 **D.** 360

5. To find 95^2 by the rule for numbers ending in 5, we first find

A. 9×5 **B.** 9×9 **C.** $9 + 10$ **D.** 9×10

6. If $p^2 = q$, then

A. $\sqrt{p} = q$ **B.** $q^2 = p$ **C.** $\sqrt{q} = 2 \times p$ **D.** $\sqrt{q} = p$

7. $\sqrt{529} =$

A. 22 **B.** 264.5 **C.** 23 **D.** 24

8. The number whose square root is 22 is

A. $\sqrt{22}$ **B.** 44 **C.** 484 **D.** 11

9. $784 = 2 \times 2 \times 2 \times 2 \times 7 \times 7$. So $\sqrt{784} =$

A. 14 **B.** 28 **C.** 56 **D.** 392

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

A. 1225 **B.** 7 **C.** 12 **D.** 35

11. By the long division method, $\sqrt{4761} =$

A. 59 **B.** 69 **C.** 79 **D.** 61

12. In finding $\sqrt{4096}$ by the long division method, the first digit of the root is 6. The new divisor starts with

A. 6 **B.** 7 **C.** 12 **D.** 36

13. By the long division method, $\sqrt{24649} =$

A. 157 **B.** 147 **C.** 167 **D.** 153

14. $\sqrt{5} \times \sqrt{80} =$

A. 200 **B.** 400 **C.** 20 **D.** $\sqrt{85}$

15. $(\sqrt{31})^2 =$

A. $\sqrt{31}$ **B.** 961 **C.** 31 **D.** 62

16. $\frac{\sqrt{98}}{\sqrt{2}} =$

A. 49 **B.** 7 **C.** $\sqrt{96}$ **D.** 24.5

17. $\frac{30}{\sqrt{30}} =$

A. $\sqrt{30}$ **B.** 1 **C.** $30\sqrt{30}$ **D.** 30

18. $\sqrt{81} + \sqrt{144} =$

A. 441 **B.** 225 **C.** 15 **D.** 21

19. $\sqrt{289} - \sqrt{225} =$

A. 8 **B.** 2 **C.** 32 **D.** 64

20. $\sqrt{6^2 + 8^2} =$

A. 10 **B.** 14 **C.** 100 **D.** $\sqrt{14}$

21. If $a = 4$ and $b = 5$, then $a^2 + b^2 =$

A. 9 **B.** 81 **C.** 41 **D.** 18

22. $\sqrt{0.64} =$

A. 0.8 **B.** 8 **C.** 0.08 **D.** 0.32

23. $\sqrt{0.0121}$ written as a fraction is

A. $\frac{11}{100}$ **B.** $\frac{11}{10}$ **C.** $\frac{11}{1000}$ **D.** $\frac{121}{100}$

24. $\sqrt{6.76} =$

A. 3.38 **B.** 26 **C.** 0.26 **D.** 2.6

25. $\sqrt{\square} = 2.4$. The number in the box is

A. 5.76 **B.** 0.576 **C.** 57.6 **D.** 4.8

Key sheet

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

Solutions

1. n^2 means

$a^2 = a \times a$

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

Ans: (B) $n \times n$

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2. The square of 18 is

$18^2 = 18 \times 18 = 324$

Ans: (D) 324

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3. The next number in $121, 144, 169, \ldots$ is

These are $11^2, 12^2, 13^2$.

Next is $14^2 = 196$

Ans: (B) 196

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4. $60^2 =$

$60^2 = 60 \times 60$

$6 \times 6 = 36$, then write two zeros: 3600

Ans: (A) 3600

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5. To find 95^2 by the rule for numbers ending in 5, we first find

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

$9 \times 10 = 90$, so $95^2 = 9025$

Ans: (D) 9×10

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6. If $p^2 = q$, then

By the definition, $a^2 = b \Rightarrow \sqrt{b} = a$.

So $p^2 = q \Rightarrow \sqrt{q} = p$

Ans: (D) $\sqrt{q} = p$

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7. $\sqrt{529} =$

$23^2 = 23 \times 23 = 529$

$\therefore \sqrt{529} = 23$

Ans: (C) 23

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8. The number whose square root is 22 is

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

$22^2 = 22 \times 22 = 484$

Ans: (C) 484

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9. $784 = 2 \times 2 \times 2 \times 2 \times 7 \times 7$. So $\sqrt{784} =$

Take one factor from each pair: $2 \times 2 \times 7 = 28$

Ans: (B) 28

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

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

$= 5 \times 7 = 35$

Ans: (D) 35

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11. By the long division method, $\sqrt{4761} =$

Pairs: $\overline{47}\ \overline{61}$.

$6 \times 6 = 36 \leq 47$: first digit 6, and $47 - 36 = 11$

Bring down 61: we get 1161. New divisor: $6 \times 2 = 12$; $129 \times 9 = 1161$; $1161 - 1161 = 0$

Remainder 0. $\therefore \sqrt{4761} = 69$

Ans: (B) 69

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12. In finding $\sqrt{4096}$ by the long division method, the first digit of the root is 6. The new divisor starts with

Double the root found so far: $6 \times 2 = 12$

Then $124 \times 4 = 496$ ($125 \times 5 = 625$ is too big), so $\sqrt{4096} = 64$

Ans: (C) 12

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13. By the long division method, $\sqrt{24649} =$

Pair the digits from the right: $\overline{2}\ \overline{46}\ \overline{49}$

$1 \times 1 = 1 \leq 2$: first digit 1, and $2 - 1 = 1$

Bring down 46: we get 146. New divisor: $1 \times 2 = 2$; $25 \times 5 = 125$ ($26 \times 6 = 156$ is too big); $146 - 125 = 21$

Bring down 49: we get 2149. New divisor: $15 \times 2 = 30$; $307 \times 7 = 2149$ ($308 \times 8 = 2464$ is too big); $2149 - 2149 = 0$

Remainder 0. $\therefore \sqrt{24649} = 157$

Ans: (A) 157

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14. $\sqrt{5} \times \sqrt{80} =$

$\sqrt{5} \times \sqrt{80} = \sqrt{5 \times 80} = \sqrt{400} = 20$

Ans: (C) 20

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15. $(\sqrt{31})^2 =$

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

$\therefore (\sqrt{31})^2 = 31$

Ans: (C) 31

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16. $\frac{\sqrt{98}}{\sqrt{2}} =$

$\frac{\sqrt{98}}{\sqrt{2}} = \sqrt{\frac{98}{2}} = \sqrt{49} = 7$

Ans: (B) 7

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17. $\frac{30}{\sqrt{30}} =$

$\frac{30}{\sqrt{30}} = \frac{\sqrt{30}\times\sqrt{30}}{\sqrt{30}} = \sqrt{30}$

Ans: (A) $\sqrt{30}$

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18. $\sqrt{81} + \sqrt{144} =$

$\sqrt{81} + \sqrt{144} = 9 + 12 = 21$

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

Ans: (D) 21

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19. $\sqrt{289} - \sqrt{225} =$

$\sqrt{289} - \sqrt{225} = 17 - 15 = 2$

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

Ans: (B) 2

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20. $\sqrt{6^2 + 8^2} =$

$\sqrt{6^2 + 8^2} = \sqrt{36 + 64} = \sqrt{100} = 10$

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

Ans: (A) 10

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21. If $a = 4$ and $b = 5$, then $a^2 + b^2 =$

$a^2 + b^2 = 4^2 + 5^2 = 16 + 25 = 41$

Note: $a^2 + b^2 \neq (a+b)^2$ (here $(a+b)^2 = 81$).

Ans: (C) 41

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22. $\sqrt{0.64} =$

$\sqrt{0.64} = \sqrt{\frac{64}{100}}$

$= \frac{\sqrt{64}}{\sqrt{100}}$

$= \frac{8}{10}$

$= 0.8$

Ans: (A) 0.8

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23. $\sqrt{0.0121}$ written as a fraction is

$\sqrt{0.0121} = \sqrt{\frac{121}{10000}} = \frac{\sqrt{121}}{\sqrt{10000}} = \frac{11}{100}$

Ans: (A) $\frac{11}{100}$

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24. $\sqrt{6.76} =$

$\sqrt{6.76} = \sqrt{\frac{676}{100}} = \frac{\sqrt{676}}{\sqrt{100}} = \frac{26}{10} = 2.6$

Ans: (D) 2.6

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25. $\sqrt{\square} = 2.4$. The number in the box is

$2.4 = \frac{24}{10}$
$\left(\frac{24}{10}\right)^2 = \frac{576}{100} = 5.76$
Check: $\sqrt{5.76} = \frac{\sqrt{576}}{\sqrt{100}} = 2.4$

Ans: (A) 5.76