

# Squares and Square Roots

## MCQ Test, Set 08

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  $63 \times 63$ ?

- A.**  $2 \times 63$                       **B.**  $2^{63}$                       **C.**  $63^3$                       **D.**  $63^2$

2. Which number below is not the square of a whole number?

- A.** 289                      **B.** 441                      **C.** 451                      **D.** 529

3. The next number in 529, 576, 625, ... is

- A.** 729                      **B.** 676                      **C.** 675                      **D.** 674

4.  $50^2 =$

- A.** 2500                      **B.** 250                      **C.** 100                      **D.** 25000

5.  $105^2 = \square 25$ . The number in the box is

- A.** 21                      **B.** 100                      **C.** 110                      **D.** 121

6. If  $161^2 = 25921$ , then  $\sqrt{25921} =$

- A.** 12960.5                      **B.**  $\sqrt{161}$                       **C.** 161                      **D.** 322

7.  $\sqrt{169} =$

- A.** 84.5                      **B.** 12                      **C.** 14                      **D.** 13

8.  $\sqrt{\square} = 19$ . The number in the box is

- A.** 361                      **B.** 9.5                      **C.**  $\sqrt{19}$                       **D.** 38

9.  $10816 = 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 13 \times 13$ . So  $\sqrt{10816} =$

- A.** 104                      **B.** 26                      **C.** 208                      **D.** 5408

10.  $\sqrt{2 \times 2 \times 7 \times 7 \times 11 \times 11} =$

- A.** 77                      **B.** 20                      **C.** 23716                      **D.** 154

11. By the long division method,  $\sqrt{2116} =$

- A.** 46                      **B.** 44                      **C.** 56                      **D.** 36

|     |                                                                                                              |                  |                |                |                |
|-----|--------------------------------------------------------------------------------------------------------------|------------------|----------------|----------------|----------------|
| 12. | While finding $\sqrt{3025}$ by long division, the first digit of the root is 5. The next divisor begins with | A. 6             | B. 25          | C. 5           | D. 10          |
| 13. | The square root of 277729 has how many digits?                                                               | A. 2             | B. 3           | C. 4           | D. 6           |
| 14. | $\sqrt{8} \times \sqrt{32} =$                                                                                | A. 256           | B. 128         | C. $\sqrt{40}$ | D. 16          |
| 15. | $(\sqrt{33})^2 =$                                                                                            | A. 1089          | B. 33          | C. $\sqrt{33}$ | D. 66          |
| 16. | $\frac{\sqrt{90}}{\sqrt{10}} =$                                                                              | A. 3             | B. 4.5         | C. $\sqrt{80}$ | D. 9           |
| 17. | $\frac{38}{\sqrt{38}} =$                                                                                     | A. $38\sqrt{38}$ | B. $\sqrt{38}$ | C. 1           | D. 38          |
| 18. | $\sqrt{729} + \sqrt{1296} =$                                                                                 | A. 2025          | B. 45          | C. 63          | D. 3969        |
| 19. | $\sqrt{400} - \sqrt{256} =$                                                                                  | A. 4             | B. 144         | C. 12          | D. 36          |
| 20. | $\sqrt{18^2 + 24^2} =$                                                                                       | A. 900           | B. 30          | C. 42          | D. $\sqrt{42}$ |
| 21. | $\sqrt{(5 + 11)^2} =$                                                                                        | A. $\sqrt{146}$  | B. 256         | C. 16          | D. 146         |
| 22. | $\sqrt{0.0064} =$                                                                                            | A. 0.0032        | B. 0.8         | C. 0.008       | D. 0.08        |
| 23. | $\sqrt{0.000025} =$                                                                                          | A. 0.05          | B. 0.0005      | C. 0.005       | D. 0.0000125   |
| 24. | $\sqrt{1.96} =$                                                                                              | A. 14            | B. 1.4         | C. 0.98        | D. 0.14        |
| 25. | $\sqrt{\square} = 2.2$ . The number in the box is                                                            | A. 4.4           | B. 4.84        | C. 48.4        | D. 0.484       |

## Key sheet

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

## Solutions

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1. Which of these is equal to  $63 \times 63$ ?

63 is multiplied by itself 2 times.

$$\therefore 63 \times 63 = 63^2$$

**Ans: (D)  $63^2$**

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2. Which number below is not the square of a whole number?

$289 = 17^2$ ,  $441 = 21^2$ ,  $529 = 23^2$ , so they are perfect squares.

451 is not in the table of squares.

**Ans: (C) 451**

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3. The next number in 529, 576, 625, ... is

These are  $23^2$ ,  $24^2$ ,  $25^2$ .

Next is  $26^2 = 676$

**Ans: (B) 676**

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4.  $50^2 =$

$$50^2 = 50 \times 50$$

$5 \times 5 = 25$ , then write two zeros: 2500

**Ans: (A) 2500**

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5.  $105^2 = \square 25$ . The number in the box is

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

$$10 \times 11 = 110, \text{ so } 105^2 = 11025$$

**Ans: (C) 110**

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6. If  $161^2 = 25921$ , then  $\sqrt{25921} =$

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

$$161^2 = 25921 \Rightarrow \sqrt{25921} = 161$$

(The square root is not half the number.)

**Ans: (C) 161**

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7.  $\sqrt{169} =$

$$13^2 = 13 \times 13 = 169$$

$$\therefore \sqrt{169} = 13$$

**Ans: (D) 13**

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8.  $\sqrt{\square} = 19$ . The number in the box is

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

$$19^2 = 19 \times 19 = 361$$

**Ans: (A) 361**

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9.  $10816 = 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 13 \times 13$ . So  $\sqrt{10816} =$

Take one factor from each pair:  $2 \times 2 \times 2 \times 13 = 104$

Ans: (A) 104

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10.  $\sqrt{2 \times 2 \times 7 \times 7 \times 11 \times 11} =$

$$\sqrt{2 \times 2 \times 7 \times 7 \times 11 \times 11} = \sqrt{(2 \times 2) \times (7 \times 7) \times (11 \times 11)} \\ = 2 \times 7 \times 11 = 154$$

Ans: (D) 154

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11. By the long division method,  $\sqrt{2116} =$

Pairs:  $\overline{21} \overline{16}$ .

$$4 \times 4 = 16 \leq 21: \text{ first digit } 4, \text{ and } 21 - 16 = 5$$

Bring down 16: we get 516. New divisor:  $4 \times 2 = 8$ ;  $86 \times 6 = 516$  ( $87 \times 7 = 609$  is too big);  $516 - 516 = 0$

$$\text{Remainder } 0. \therefore \sqrt{2116} = 46$$

Ans: (A) 46

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12. While finding  $\sqrt{3025}$  by long division, the first digit of the root is 5. The next divisor begins with

$$\text{Double the root found so far: } 5 \times 2 = 10$$

$$\text{Then } 105 \times 5 = 525 \text{ (} 106 \times 6 = 636 \text{ is too big), so } \sqrt{3025} = 55$$

Ans: (D) 10

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13. The square root of 277729 has how many digits?

Pairs from the right:  $\overline{27} \overline{77} \overline{29}$ , that is 3 groups.

$$\text{One digit of the root for each group: } \sqrt{277729} = 527$$

Ans: (B) 3

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14.  $\sqrt{8} \times \sqrt{32} =$

$$\sqrt{8} \times \sqrt{32} = \sqrt{8 \times 32} = \sqrt{256} = 16$$

Ans: (D) 16

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15.  $(\sqrt{33})^2 =$

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

$$\therefore (\sqrt{33})^2 = 33$$

Ans: (B) 33

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16.  $\frac{\sqrt{90}}{\sqrt{10}} =$

$$\frac{\sqrt{90}}{\sqrt{10}} = \sqrt{\frac{90}{10}} = \sqrt{9} = 3$$

Ans: (A) 3

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17.  $\frac{38}{\sqrt{38}} =$

$$\frac{38}{\sqrt{38}} = \frac{\sqrt{38} \times \sqrt{38}}{\sqrt{38}} = \sqrt{38}$$

Ans: (B)  $\sqrt{38}$

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18.  $\sqrt{729} + \sqrt{1296} =$

$$\sqrt{729} + \sqrt{1296} = 27 + 36 = 63$$

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

Ans: (C) 63

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19.  $\sqrt{400} - \sqrt{256} =$

$$\sqrt{400} - \sqrt{256} = 20 - 16 = 4$$

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

Ans: (A) 4

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20.  $\sqrt{18^2 + 24^2} =$

$$\sqrt{18^2 + 24^2} = \sqrt{324 + 576} = \sqrt{900} = 30$$

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

Ans: (B) 30

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21.  $\sqrt{(5 + 11)^2} =$

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

$$\sqrt{(5 + 11)^2} = \sqrt{16^2} = 16$$

Ans: (C) 16

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22.  $\sqrt{0.0064} =$

$$\sqrt{0.0064} = \sqrt{\frac{64}{10000}}$$

$$= \frac{\sqrt{64}}{\sqrt{10000}}$$

$$= \frac{8}{100}$$

$$= 0.08$$

Ans: (D) 0.08

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23.  $\sqrt{0.000025} =$

$$\sqrt{0.000025} = \sqrt{\frac{25}{1000000}}$$

$$= \frac{\sqrt{25}}{\sqrt{1000000}}$$

$$= \frac{5}{1000}$$

$$= 0.005$$

Ans: (C) 0.005

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24.  $\sqrt{1.96} =$

$$\sqrt{1.96} = \sqrt{\frac{196}{100}} = \frac{\sqrt{196}}{\sqrt{100}} = \frac{14}{10} = 1.4$$

Ans: (B) 1.4

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25.  $\sqrt{\square} = 2.2$ . The number in the box is

$$2.2 = \frac{22}{10}$$

$$\left(\frac{22}{10}\right)^2 = \frac{484}{100} = 4.84$$

$$\text{Check: } \sqrt{4.84} = \frac{\sqrt{484}}{\sqrt{100}} = 2.2$$

**Ans: (B) 4.84**

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