

Squares and Square Roots

MCQ Test, Set 06

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.

- z^2 means
 A. $2 \times z$ B. $z \times z \times z$ C. $z \times z$ D. $z + 2$
- Which of these numbers is the square of a whole number?
 A. 696 B. 666 C. 686 D. 676
- Given $21^2 = 441$, using the pattern of the table, $29^2 =$
 A. 58 B. 449 C. 841 D. 941
- $50^2 - 30^2 =$
 A. 3400 B. 1600 C. 160 D. 400
- $85^2 = \square 25$. The number in the box is
 A. 17 B. 81 C. 72 D. 64
- If $153^2 = 23409$, then $\sqrt{23409} =$
 A. $\sqrt{153}$ B. 153 C. 11704.5 D. 306
- $\sqrt{256} =$
 A. 16 B. 15 C. 17 D. 128
- $\sqrt{\square} = 13$. The number in the box is
 A. $\sqrt{13}$ B. 6.5 C. 26 D. 169
- $625 = 5 \times 5 \times 5 \times 5$. So $\sqrt{625} =$
 A. 25 B. 5 C. 125 D. 312.5
- $\sqrt{5 \times 5 \times 11 \times 11} =$
 A. 3025 B. 16 C. 11 D. 55
- By the long division method, $\sqrt{3844} =$
 A. 72 B. 68 C. 62 D. 52

12.	While finding $\sqrt{6561}$ by long division, the first digit of the root is 8. The next divisor begins with	A. 8	B. 16	C. 64	D. 9
13.	By the long division method, $\sqrt{75076} =$	A. 284	B. 264	C. 274	D. 276
14.	$\sqrt{3} \times \sqrt{75} =$	A. $\sqrt{78}$	B. 15	C. 112.5	D. 225
15.	$(\sqrt{26})^2 =$	A. 26	B. $\sqrt{26}$	C. 676	D. 52
16.	$\frac{\sqrt{175}}{\sqrt{7}} =$	A. $\sqrt{168}$	B. 12.5	C. 25	D. 5
17.	$\frac{34}{\sqrt{34}} =$	A. $34\sqrt{34}$	B. 1	C. 34	D. $\sqrt{34}$
18.	$\sqrt{100} + \sqrt{576} =$	A. 676	B. 34	C. 1156	D. 26
19.	$\sqrt{225} - \sqrt{144} =$	A. 81	B. 3	C. 9	D. 27
20.	$\sqrt{9^2 + 40^2} =$	A. 41	B. $\sqrt{49}$	C. 1681	D. 49
21.	If $a = 3$ and $b = 7$, then $a^2 + b^2 =$	A. 100	B. 20	C. 10	D. 58
22.	$\sqrt{0.0081} =$	A. 0.09	B. 0.00405	C. 0.009	D. 0.9
23.	$\sqrt{0.0324}$ written as a fraction is	A. $\frac{324}{100}$	B. $\frac{18}{10}$	C. $\frac{18}{1000}$	D. $\frac{18}{100}$
24.	$\sqrt{3.61} =$	A. 1.805	B. 19	C. 1.9	D. 0.19
25.	$\sqrt{\square} = 7.5$. The number in the box is	A. 56.25	B. 5.625	C. 15	D. 562.5

Key sheet

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

Solutions

1. z^2 means

$$a^2 = a \times a$$

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

Ans: (C) $z \times z$

2. Which of these numbers is the square of a whole number?

$$676 = 26 \times 26 = 26^2$$

The other numbers are not in the table of squares.

Ans: (D) 676

3. Given $21^2 = 441$, using the pattern of the table, $29^2 =$

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.

$$29^2 = 441 + 400 = 841$$

Ans: (C) 841

4. $50^2 - 30^2 =$

$$50^2 - 30^2 = 2500 - 900 = 1600$$

Ans: (B) 1600

5. $85^2 = \square 25$. The number in the box is

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

$$8 \times 9 = 72, \text{ so } 85^2 = 7225$$

Ans: (C) 72

6. If $153^2 = 23409$, then $\sqrt{23409} =$

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

$$153^2 = 23409 \Rightarrow \sqrt{23409} = 153$$

(The square root is not half the number.)

Ans: (B) 153

7. $\sqrt{256} =$

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

$$\therefore \sqrt{256} = 16$$

Ans: (A) 16

8. $\sqrt{\square} = 13$. The number in the box is

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

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

Ans: (D) 169

9. $625 = 5 \times 5 \times 5 \times 5$. So $\sqrt{625} =$

Take one factor from each pair: $5 \times 5 = 25$

Ans: (A) 25

10. $\sqrt{5 \times 5 \times 11 \times 11} =$

$$\sqrt{5 \times 5 \times 11 \times 11} = \sqrt{(5 \times 5) \times (11 \times 11)}$$
$$= 5 \times 11 = 55$$

Ans: (D) 55

11. By the long division method, $\sqrt{3844} =$

Pairs: $\overline{38} \overline{44}$.

$$6 \times 6 = 36 \leq 38: \text{first digit } 6, \text{ and } 38 - 36 = 2$$

Bring down 44: we get 244. New divisor: $6 \times 2 = 12$; $12 \times 2 = 24$ ($12 \times 3 = 36$ is too big); $244 - 244 = 0$

$$\text{Remainder } 0. \therefore \sqrt{3844} = 62$$

Ans: (C) 62

12. While finding $\sqrt{6561}$ by long division, the first digit of the root is 8. The next divisor begins with

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

$$\text{Then } 16 \times 1 = 16 \text{ (} 16 \times 2 = 32 \text{ is too big), so } \sqrt{6561} = 81$$

Ans: (B) 16

13. By the long division method, $\sqrt{75076} =$

Pair the digits from the right: $\overline{7} \overline{50} \overline{76}$

$$2 \times 2 = 4 \leq 7: \text{first digit } 2, \text{ and } 7 - 4 = 3$$

Bring down 50: we get 350. New divisor: $2 \times 2 = 4$; $4 \times 7 = 28$ ($4 \times 8 = 32$ is too big); $350 - 320 = 30$

Bring down 76: we get 2176. New divisor: $27 \times 2 = 54$; $54 \times 4 = 216$ ($54 \times 5 = 270$ is too big); $2176 - 2160 = 16$

$$\text{Remainder } 0. \therefore \sqrt{75076} = 274$$

Ans: (C) 274

14. $\sqrt{3} \times \sqrt{75} =$

$$\sqrt{3} \times \sqrt{75} = \sqrt{3 \times 75} = \sqrt{225} = 15$$

Ans: (B) 15

15. $(\sqrt{26})^2 =$

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

$$\therefore (\sqrt{26})^2 = 26$$

Ans: (A) 26

16. $\frac{\sqrt{175}}{\sqrt{7}} =$
 $\frac{\sqrt{175}}{\sqrt{7}} = \sqrt{\frac{175}{7}} = \sqrt{25} = 5$

Ans: (D) 5

17. $\frac{34}{\sqrt{34}} =$
 $\frac{34}{\sqrt{34}} = \frac{\sqrt{34} \times \sqrt{34}}{\sqrt{34}} = \sqrt{34}$

Ans: (D) $\sqrt{34}$

18. $\sqrt{100} + \sqrt{576} =$
 $\sqrt{100} + \sqrt{576} = 10 + 24 = 34$
 $\sqrt{a} + \sqrt{b} \neq \sqrt{a+b}$, so do not add first.

Ans: (B) 34

19. $\sqrt{225} - \sqrt{144} =$
 $\sqrt{225} - \sqrt{144} = 15 - 12 = 3$
 $\sqrt{a} - \sqrt{b} \neq \sqrt{a-b}$, so do not subtract first.

Ans: (B) 3

20. $\sqrt{9^2 + 40^2} =$
 $\sqrt{9^2 + 40^2} = \sqrt{81 + 1600} = \sqrt{1681} = 41$
 $\sqrt{a^2 + b^2} \neq a + b$

Ans: (A) 41

21. If $a = 3$ and $b = 7$, then $a^2 + b^2 =$
 $a^2 + b^2 = 3^2 + 7^2 = 9 + 49 = 58$
 Note: $a^2 + b^2 \neq (a+b)^2$ (here $(a+b)^2 = 100$).

Ans: (D) 58

22. $\sqrt{0.0081} =$
 $\sqrt{0.0081} = \sqrt{\frac{81}{10000}}$
 $= \frac{\sqrt{81}}{\sqrt{10000}}$
 $= \frac{9}{100}$
 $= 0.09$

Ans: (A) 0.09

23. $\sqrt{0.0324}$ written as a fraction is
 $\sqrt{0.0324} = \sqrt{\frac{324}{10000}} = \frac{\sqrt{324}}{\sqrt{10000}} = \frac{18}{100}$

Ans: (D) $\frac{18}{100}$

24. $\sqrt{3.61} =$
 $\sqrt{3.61} = \sqrt{\frac{361}{100}} = \frac{\sqrt{361}}{\sqrt{100}} = \frac{19}{10} = 1.9$

Ans: (C) 1.9

25. $\sqrt{\square} = 7.5$. The number in the box is

$$7.5 = \frac{75}{10}$$

$$\left(\frac{75}{10}\right)^2 = \frac{5625}{100} = 56.25$$

$$\text{Check: } \sqrt{56.25} = \frac{\sqrt{5625}}{\sqrt{100}} = 7.5$$

Ans: (A) 56.25
