SQUARE ROOTS
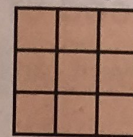
When a number is multiplied by itself you get a square number.

The number which is multiplied by itself is the square root. ($\sqrt{}$)
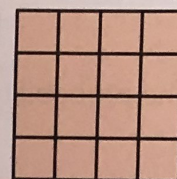
Examples

$3^2 = 3 \times 3 = 9$

$\sqrt{9} = 3$

$4^2 = 4 \times 4 = 16$

$\sqrt{16} = 4$

A

1. Copy and complete this table for 12 lines.

$\sqrt{1} = 1 \div 1 = 1$

$\sqrt{4} = 4 \div 2 = 2$

$\sqrt{9} = 9 \div 3 = 3$

HINT: Work from right to left and multiply.

Work out the length of the sides of each square.

2. Area 4 cm²
3. Area 81 cm²
4. Area 25 cm²
5. Area 49 cm²
6. Area 100 cm²
7. Area 9 cm²
8. Area 64 cm²
9. Area 16 cm²
10. Area 144 cm²
11. Area 36 cm²
12. Area 121 cm²
13. Area 1 m²

B

Work out

1. $\sqrt{36} + \sqrt{9}$
2. $\sqrt{81} + \sqrt{4}$
3. $\sqrt{144} + \sqrt{49}$
4. $\sqrt{100} - \sqrt{4}$
5. $\sqrt{121} - \sqrt{25}$
6. $\sqrt{81} - \sqrt{64}$
7. $\sqrt{49} \times \sqrt{121}$
8. $\sqrt{36} \times \sqrt{81}$
9. $\sqrt{64} \times \sqrt{16}$
10. $\sqrt{144} \div \sqrt{4}$
11. $\sqrt{100} \div \sqrt{25}$
12. $\sqrt{81} \div \sqrt{9}$

Work out

13. $\sqrt{100}$
14. $\sqrt{400}$
15. $\sqrt{2500}$
16. $\sqrt{6400}$
17. $\sqrt{900}$
18. $\sqrt{12\,100}$
19. $\sqrt{1600}$
20. $\sqrt{4900}$
21. $\sqrt{8100}$
22. $\sqrt{3600}$
23. $\sqrt{10\,000}$
24. $\sqrt{14\,400}$

C

Example

Which two-digit number has a square root of 3844?

Step 1 – The 10s Digit

3844 comes between:

60^2 and 70^2

$3600 < 3844 < 4900$

The 10s digit is 6.

Step 2 – The Units Digit

3844 ends in a 4.

The units digit must be $2(2 \times 2 = 4)$ or $8(8 \times 8 = 64)$

3844 is closer to 60^2 than 70^2.

The units digit is 2.

Therefore $\sqrt{3844} = 62$

Use the above method to predict the square root of these numbers.

1. 289
2. 8464
3. 1156
4. 625
5. 2401
6. 5776
7. 3364
8. 4096
9. 2809
10. 6241
11. 3721
12. 7744

13. Check each answer by squaring your prediction.