ESTIMATING SQUARE ROOTS

ANSWERS

THE **SQUARE ROOT** OF A NUMBER IS THE SQUARE YOU MULTIPLIED TO GET THE NUMBER.
A RADICAL SIGN, $\sqrt{\ }$, IS USED TO SHOW THE POSITIVE SQUARE ROOT OF A NUMBER.

Helpful Examples

$\sqrt{25} = 5$ $\sqrt{484} = 22$ $\sqrt{0.49} = 0.7$ $\sqrt{2.25} = 1.5$

$5 \times 5 = 25$ $22 \times 22 = 484$ $0.7 \times 0.7 = 0.49$ $1.5 \times 1.5 = 2.25$

25, 484, 0.49, AND 2.25 ARE ALL PERFECT SQUARES BECAUSE THEY ARE THE SQUARES OF RATIONAL NUMBERS.
YOU CAN CLEARLY SEE THE ANSWER.

BUT MOST OF THE TIME SQUARE ROOTS ARE NOT RATIONAL NUMBERS AND THE SQUARES ARE NOT PERFECT SQUARES.
YOU WILL HAVE TO ESTIMATE THE ANSWER.

Helpful Example

$\sqrt{27}$ is not a perfect square. The answer will have to be an estimate.

$\sqrt{27}$ is between $\sqrt{25}$ and $\sqrt{36}$

$5 \times 5 = 25$ $6 \times 6 = 36$

$\sqrt{27}$ is between 5 and 6, but is closer to 5.

You can estimate it to a whole number of 5.

$\sqrt{27}$ is about 5

THE GOAL IS TO FIND THE TWO PERFECT SQUARES 27 IS BETWEEN, WHICH IS 25 AND 36. THEN FIGURE OUT WHICH ONE IT IS CLOSER TO. 27 - 25 = 2 AND 36 - 27 = 9, SO IT IS CLOSER TO 25. THE SQUARE ROOT OF 25 IS **5**.

Now your turn. Estimate the square roots to the nearest whole number.

a. $\sqrt{130}$ $11 \times 11 = 121$, $12 \times 12 = 144$ ⇨ 130 - 121 = 9, 144 - 130 = 14 ⇨ 130 is closer to 121, $\sqrt{130}$ is about 11

1. $\sqrt{55}$ **about 7**

2. $\sqrt{113}$ **about 11**

3. $\sqrt{40.5}$ **about 6**

4. $\sqrt{92}$ **about 10**

5. $\sqrt{152}$ **about 12**

6. $\sqrt{219}$ **about 15**

7. $\sqrt{6.2}$ **about 2**

8. $\sqrt{131}$ **about 11**

9. $\sqrt{70.4}$ **about 8**

10. $\sqrt{425}$ **about 21**

11. $\sqrt{46}$ **about 7**

12. $\sqrt{21.7}$ **about 5**