Name _____ Date _____

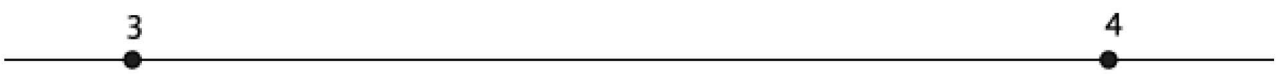
Square Roots

1. Write the positive square root of a number x in symbolic notation.

2. Determine the positive square root of 196, if it exists. Explain.

3. Determine the positive square root of 50, if it exists. Explain.

4. Place the following numbers on the number line below: $\sqrt{16}$, $\sqrt{9}$, $\sqrt{11}$, 3.5.



Determine the positive square root of the number given. If the number is not a perfect square, determine the integer to which the square root would be closest.

1. $\sqrt{169}$

2. $\sqrt{256}$

3. $\sqrt{81}$

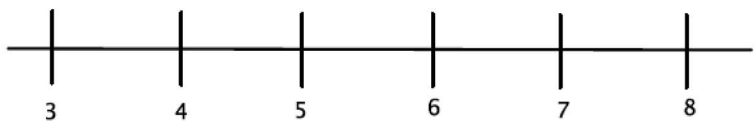
4. $\sqrt{147}$

5. $\sqrt{8}$

6. Which of the numbers in Problems 1–5 are not perfect squares? Explain.

7. Place the following list of numbers in their approximate locations a number line:

$\sqrt{32}$ $\sqrt{12}$ $\sqrt{27}$ $\sqrt{18}$ $\sqrt{23}$ $\sqrt{50}$



8. Between which two integers will $\sqrt{45}$ be located? Explain how you know.

1. **Write the square root of a number x in symbolic notation.**

   $\sqrt{x}$

2. **Determine the positive square root of 196, if it exists. Explain.**

   $\sqrt{196} = 14$ *because* $14^2 = 196$.

3. **Determine the positive square root of 50, if it exists. Explain.**

   $\sqrt{50}$ is between 7 and 8, but closer to 7. The reason is that $7^2 = 49$ and $8^2 = 64$. The number 50 is between 49 and 64, but closer to 49. Therefore, the square root of 50 is close to 7.

4. **Place the following numbers on the number line below: $\sqrt{16}$, $\sqrt{9}$, $\sqrt{11}$, 3.5.**

   Solutions are shown in red below.

Determine the positive square root of the number given. If the number is not a perfect square, determine the integer to which the square root would be closest.

1. $\sqrt{169}$

   13

2. $\sqrt{256}$

   16

3. $\sqrt{81}$

   9

4. $\sqrt{147}$

   The number 147 is not a perfect square. It is between the perfect squares 144 and 169, but closer to 144. Therefore, the square root of 147 is close to 12.

5. $\sqrt{8}$

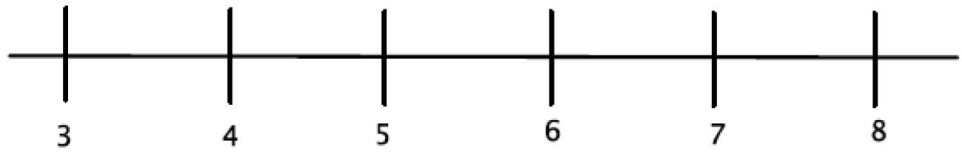
   The number 8 is not a perfect square. It is between the perfect squares 4 and 9, but closer to 9. Therefore, the square root of 8 is close to 3.

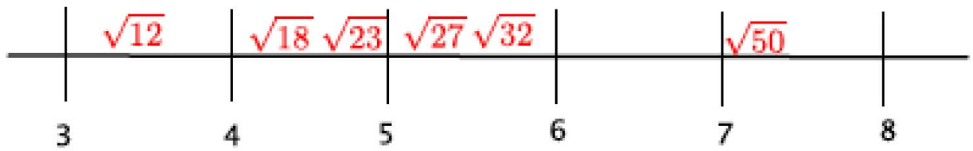
6. **Which of the numbers in Problems 1–5 are not perfect squares? Explain.**

The numbers 147 and 8 are not perfect squares because there is no integer x so that $x^2 = 147$ or $x^2 = 8$.

7. **Place the following list of numbers in their approximate locations a number line:**

$\sqrt{32}$ $\sqrt{12}$ $\sqrt{27}$ $\sqrt{18}$ $\sqrt{23}$ $\sqrt{50}$





Answers are noted in red.

8. **Between which two integers will $\sqrt{45}$ be located? Explain how you know.**

The number 45 is not a perfect square. It is between the perfect squares 36 and 49, but closer to 49. Therefore, the square root of 45 is between the integers 6 and 7 because $\sqrt{36} = 6$ and $\sqrt{49} = 7$ and $\sqrt{36} < \sqrt{45} < \sqrt{49}$.