REVIEW: Approximating Square Roots
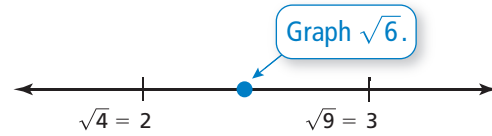
Name _____

Key Concept and Vocabulary

To approximate a square root to the nearest integer, use a number line and the square roots of the perfect squares nearest to the number. Then determine which perfect square is closer to the radicand.

Approximating

Visual Model

Graph $\sqrt{6}$.
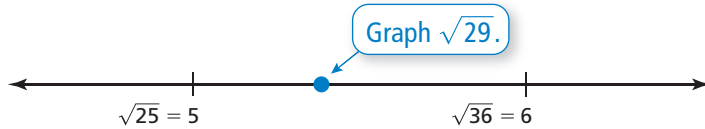
$$\sqrt{4} = 2 \qquad \sqrt{9} = 3$$

$\sqrt{6} \approx 2$ because 6 is closer to 4 than to 9.

Skill Example

1. $\sqrt{29} \approx 5$

The nearest perfect square less than 29 is 25. The nearest perfect square greater than 29 is 36. Because 29 is closer to 25 than to 36, $\sqrt{29}$ is closer to 5 than to 6.

Graph $\sqrt{29}$.

$$\sqrt{25} = 5 \qquad \sqrt{36} = 6$$

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Check your answers at BigIdeasMath.com.

Estimate to the nearest integer.

2. $\sqrt{60} \approx \underline{8}$ 3. $\sqrt{14} \approx \underline{4}$ 4. $\sqrt{86} \approx \underline{9}$ 5. $\sqrt{19} \approx \underline{4}$

6. $\sqrt{77} \approx \underline{9}$ 7. $\sqrt{138} \approx \underline{12}$ 8. $-\sqrt{45} \approx \underline{-7}$ 9. $-\sqrt{103} \approx \underline{-10}$

Graph the two numbers. Then compare them using < or >.

10. $5 \boxed{>} \sqrt{5}$

11. $3\frac{1}{4} \boxed{<} \sqrt{13}$

12. $\sqrt{20} \boxed{<} 4\frac{4}{5}$

13. $\sqrt{47} \boxed{>} 6.1$

14. $9.3 \boxed{<} \sqrt{96}$

15. $-3.5 \boxed{>} -\sqrt{15}$

16. **PLATE** The radius of a circle with area A is approximately $\sqrt{\dfrac{A}{3}}$. The area of a plate is 81 square inches. Estimate the radius of the plate to the nearest inch. _____ 5 inches _____

17. **DECK** The area of a square deck is 248 square feet. Estimate the length of one side of the deck to the nearest foot. _____ 16 feet _____