ALGEBRA 1
1-3 PRACTICE:
REAL NUMBERS and the NUMBER LINE

Name KEY

Name the subset(s) of the real numbers to which each number belongs.

1. $\frac{4}{5}$ $\mathbb{Q}, \mathbb{R}$

2. $\sqrt{16} = 4$ $\mathbb{N}, \mathbb{W}, \mathbb{Z}, \mathbb{Q}, \mathbb{R}$

3. -12π $\mathbb{I}, \mathbb{R}$

4. $3.\overline{48}$ $\mathbb{Q}, \mathbb{R}$

5. List the set of perfect squares from 1^2 to 15^2.

1, 4, 9, 16, 25, 36, 49, 64, 81, 100, 121, 169, 196, 225

Simplify each expression.

6. $\sqrt{81} = 9$

7. $-\sqrt{144} = -12$

8. $\sqrt{\frac{4}{25}} = \frac{2}{5}$

9. $\sqrt{0.36} = 0.6$

Estimate each expression to the nearest integer.

10. $\sqrt{51} \approx 7$

$\sqrt{49} < \sqrt{51} < \sqrt{64}$

$7 < \sqrt{51} < 8$

11. $\sqrt{119} \approx 11$

$\sqrt{100} < \sqrt{119} < \sqrt{121}$

$10 < \sqrt{119} < 11$

Find the *approximate* side length of each square figure to the nearest whole number.

12. A picture frame with an area of $18\ m^2$.

$\sqrt{18\ m^2} \approx 4\ m$

13. A game board with an area of $150\ in^2$

$\sqrt{150\ in^2} \approx 13\ in$

Order the numbers in each set from least to greatest.

14. $5.1,\ \sqrt{18},\ \frac{28}{7}$

5.1 4.... , 4

$\frac{28}{7}, \sqrt{18}, 5.1$

15. $-\frac{13}{6}, -2.1, -\frac{26}{13}, -\frac{9}{4}$

$-2.1\overline{6}, -2.1, -2, -2.25$

$-\frac{9}{4}, -\frac{13}{6}, -2.1, -\frac{26}{13}$

Tell whether each statement is true or false.
If false, give an example to validate your reasoning.

16. All negative numbers are integers. False; $-\frac{1}{2}$

17. All integers are rational numbers. True

18. All square roots are irrational numbers. False; $\sqrt{4} = 2$

19. No positive numbers are integers. False; 5

20. **Error Analysis. Explain why the below statement is incorrect.**

A student says that $\sqrt{7}$ is a rational number, because you can write it as a fraction $\frac{\sqrt{7}}{1}$.

$\sqrt{7}$ is a rational number, because $\sqrt{7} \approx 2.645751...$
which cannot be written as a fraction.
The value never ends & never repeats.