NAME: _____ PERIOD: _____ DATE: _____

Homework Problem Set

Solve each absolute value equation.

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1. $|k - 6| = 10$

$$k - 6 = 10 \qquad k - 6 = -10$$
$$+6 \ +6 \qquad\quad +6 \quad +6$$
$$\overline{} \qquad \overline{}$$
$$k = 16 \quad \text{OR} \quad k = -4$$

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2. $|a| + 6 = 13$

$$-6 \ -6$$
$$\overline{}$$
$$|a| = 7$$
$$a = 7 \quad \text{OR} \quad a = -7$$

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3. $|n - 10| = 4$

$$n - 10 = 4 \qquad n - 10 = -4$$
$$+10 \ +10 \qquad +10 \ +10$$
$$\overline{} \qquad \overline{}$$
$$n = 14 \quad \text{or} \quad n = 6$$

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4. $|-3r| = 27$

$$\frac{-3r}{-3} = \frac{27}{-3} \qquad \frac{-3r}{-3} = \frac{-27}{-3}$$
$$r = -9 \quad \text{or} \quad r = 9$$

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5. $\dfrac{|n|}{4} = 2$

$$4 \cdot \frac{|n|}{4} = 2 \cdot 4$$
$$|n| = 8$$
$$n = 8 \quad \text{or} \quad n = -8$$

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6. $|6 - 7r| + 4 = 38$

$$|6 + 7r| + 4 = 38$$
$$|6 + 7r| = 34$$
$$6 + 7r = 34 \qquad\qquad 6 + 7r = 34$$
$$\frac{7r}{7} = \frac{28}{7} \qquad\qquad \frac{7r}{7} = \frac{-40}{7}$$
$$r = 4 \quad \text{or} \quad r = \frac{-40}{7}$$

7. $-8|10 + p| - 6 = -22$

$$-8|10+p|-6=-22$$

$$\frac{-8|10+p|}{-8} = \frac{-16}{-8}$$

$$|10+p| = 2$$

$$10+p= 2 \qquad 10+p=-2$$

$$\boxed{p=-8 \quad \text{or} \quad p=-12}$$

8. $10 + 3|-2r| = 22$

$$10 +3|-2r|=22$$

$$\frac{3|-2r|}{3} = \frac{12}{3}$$

$$|-2r| = 4$$

$$-2r=4 \qquad -2r=-4$$

$$\boxed{r=-2 \quad \text{or} \quad r=2}$$

9. $2 + 8|7k - 2| = 42$

$$2+8|7k-2|=42$$

$$\frac{8|7k-2|}{8} = \frac{40}{8}$$

$$|7k-2| =5$$

$$7k-2=5 \qquad 7k-2=-5$$

$$7k=7 \qquad\qquad 7k=-3$$

$$\boxed{k=1 \quad \text{or} \quad k= \frac{-3}{7}}$$

10. $7|3n + 5| - 7 = 0$

$$7|3n+5|-7=0$$

$$\frac{7|3n+5|}{7} = \frac{7}{7}$$

$$|3n+5|=1$$

$$3n+5=1 \qquad 3n+5=-1$$

$$3n=-4 \qquad\qquad 3n=-6$$

$$\boxed{n=-\frac{4}{3} \quad \text{or} \quad n=-2}$$

11. Lindsey is making some home-made toffee. The recipe says that she must bring the mixture to a boil at 285 degrees. If she is 7 degrees above or below, the toffee should turn out fine.

Write and solve an <u>absolute value equation</u> to model the minimum and maximum temperatures that would still create yummy toffee.

$$|x-285| =7$$

$$x-285 = 7 \qquad x-285=-7$$

$$x= 292° \quad \text{or} \quad x= 278°$$

$$\boxed{\text{Min temp. } 278° \\ \text{Max temp } 292°}$$

Spiral REVIEW—True and False Statements

For Problems 12–17, let $x = -3$ and $y = \frac{2}{3}$. Determine whether the following equations are true, false, or neither true nor false.

12. $xy = -2$

$-1 \; (-\cancel{3})\left(\frac{2}{\cancel{3}}\right) = -2$

$-2 = -2 \checkmark$

TRUE

13. $x + 3y = -1$

$-3 + \cancel{3}\left(\frac{2}{\cancel{3}}\right) = -1$

$-3 + 2 = -1$

$-1 = -1 \checkmark$

TRUE

14. $x + z = 4$

$-3 + z = 4$

$z = 4$

Neither

15. $9y = -2x$

16. $\dfrac{y}{x} = -2$

17. $\dfrac{-\frac{2}{x}}{y} = -1$

Spiral REVIEW—Solving Equations

For Problems 18–21, which values of x will make the equation a true statement?

18. $x + 2 = 9$

$X = 7$

19. $x + 2^2 = -9$

$X = -13$

20. $-12t = 12$

$t = -1$

21. $12t = 24$

$t = 2$

REVIEW—Translate

For each description, match the expression, equation or inequality.

E 22. Four is less than a number

A 23. Four more than a number is 6

H 24. Four is greater than or equal to a number minus three

C 25. Four multiplied by a number is equal to three

B 26. Four is less than or equal to a number

F 27. Four is equal to three less a number

D 28. Four more than three is equal to a number

G 29. Four is greater than a number multiplied by three

A. $n + 4 = 6$

B. $4 \le n$

C. $4 \cdot n = 3$

D. $3 + 4 = n$

E. $4 < n$

F. $4 = n - 3$

G. $4 > n \cdot 3$

H. $4 \ge n - 3$