Final Review

1. $-3 + 12 \div 4 \cdot 7$

$3 \cdot 7$

$-3 + 21$

3. $-3^2 \div (-3)$ ⟨18⟩

$-9 \div -3$

③

Evaluate each expression. Show work.

5. $|2 - 4m|; \; m = -11$

$|2 - (-44)| \to |46| \to$ ⟨46⟩

7. $|6.2 - 9.1 + (-3.1)|$

$|-2.9 + -3.1|$

$|-6| \to$ ⑥

9. $\left(\dfrac{5}{8}x + \dfrac{1}{6} = \dfrac{3}{4}\right) 24$

$15x + 4 = 18$

$\quad\;\; -4 \quad -4$

$15x = 14$

$x = \dfrac{14}{15}$

10. $-18 = 6(n + 3)$

$-18 = 6n + 18$

$-18 \qquad -18$

$-36 = 6n$

$n = -6$

12. $-2.25x = 0.25x$

No Solution!

13. $7 - 2 = -18x - 3 + 3x$

$5 = -15x - 3$

$+3 \qquad\quad +3$

$8 = -15x$ ⟨$x = -\dfrac{8}{15}$⟩

2. $14 + 8 \div 4 + 8 \cdot 3$

$14 + 2 + 24$

$16 + 24 =$ ⟨40⟩

4. $-22(-5) + (-3)$

$110 + -3$

⟨107⟩

6. $y^2 \div z; \; y = -6, z = -3$

$(-6)^2 \div -3$ ⟨-12⟩

$36 \div -3 =$

8. $-3\dfrac{1}{5} - 2\dfrac{4}{5}$

$-\dfrac{16}{5} - \dfrac{14}{5} \to -\dfrac{30}{5} =$ ⟨-6⟩

11. $\dfrac{5}{2} \cdot 5 = \dfrac{2}{5}x \left(\dfrac{5}{2}\right)$

$x = \dfrac{25}{2}$

14. $-4m - 9 = -1$

$\qquad\quad +9 \; +9$

$-4m = 8$

$-4 \qquad 4$

$m = -2$

For problems #15-19 Solve each absolute value equation or inequality.

15. $-3|x - 2| - 5 = 22$

$\qquad\quad +5 \; +5$

$\dfrac{-3|x-2|}{-3} = \dfrac{27}{-3}$

$|x - 2| = -9$

No Solution

16. $4|y - 6| = -32$

$\dfrac{}{4} \qquad \dfrac{}{4}$

$|y - 6| = -8$ N.S.

17. $|r - 5| \geq 2$

3 5 7

$x \leq 3 \quad$ or $\quad x \geq 7$

18. $-3|d + 1| + 5 < -6$

$\qquad\quad -5 \; -5$

$\dfrac{-3|d+1|}{-3} < \dfrac{-11}{-3}$

$|d - (-1)| \geq \dfrac{11}{3}$

⟨$x < -\dfrac{14}{3}$ or $x > \dfrac{8}{3}$⟩
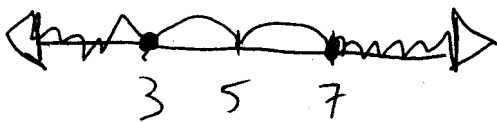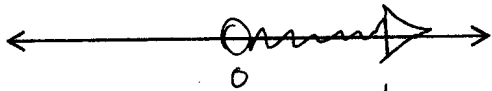

$-\dfrac{14}{3} \qquad -1 \qquad \dfrac{8}{3}$
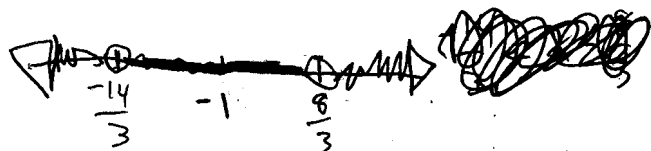
Solve each inequality. Graph the solution.

19. $\dfrac{3(x-3)}{3} > \dfrac{-9}{3}$

$x - 3 > -3$

$+3 \quad +3$

$x > 0$

0

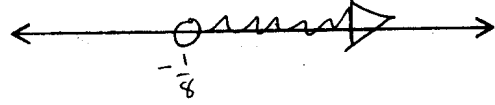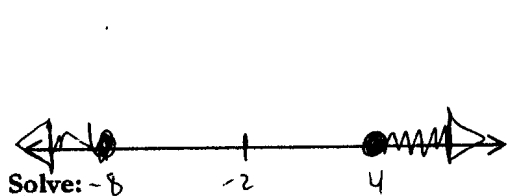20. $-3x + 9 < 5x + 10$

$+3x \qquad +3x$

$9 < 8x + 10$

$\qquad -10$

$\dfrac{-1}{8} < \dfrac{8x}{8} \qquad -\dfrac{1}{8} < x$

$\boxed{x > -\dfrac{1}{8}}$

$-\dfrac{1}{8}$

21. $|r + 2| \geq 6 \rightarrow |r - (-2)| \geq 6$

Solve: -8 $\quad$ -2 $\quad$ 4

$x \leq -8$

or

$x \geq 4$

22. $-2|d + 2| + 2 < -2$

$\qquad -2 \quad -2$

$\dfrac{-2|d+2|}{-2} < \dfrac{-4}{-2}$

$|d - (-2)| > 2$

$-4 \quad -2 \quad 0$

$d < -4$ or $d > 0$

23. $-6 \leq 6c + 6 < 12$

$-6 \qquad -6 \quad -6$

$\dfrac{-12}{6} \leq \dfrac{6c}{6} < \dfrac{6}{6}$

$-2 \leq c < 1$

24. $-5b > 40$ or $3b + 6 > 0$

$-5 \; -5 \qquad \qquad -6 \; -6$

$b < -8 \qquad \dfrac{3b}{3} > \dfrac{-6}{3}$

$b > -2$

Find the slope and y-intercept of the following:

25. $14x + 4y = 28$

$-14x \qquad -14x$

$\dfrac{4y}{4} = \dfrac{-14x}{4} + \dfrac{28}{4}$

$y = \dfrac{-14}{4}x + 7$

$\boxed{y\,int = 7 \quad slope = -\dfrac{14}{4}}$

26. $y = 3x + 15$

$\boxed{3 = m \quad y\,int = 15}$

27. $\dfrac{-3x}{20} + \dfrac{-3}{20} = \dfrac{20y}{20}$

$y = -\dfrac{3}{20}x - \dfrac{3}{20}$

$\boxed{y\,int = -\dfrac{3}{20} \quad slope = -\dfrac{3}{20}}$

28. $5x + 3y = 2x - 5$

$-5x \qquad -5x$

$\dfrac{3y}{3} = \dfrac{-3x}{3} - \dfrac{5}{3}$

$y = -x - \dfrac{5}{3}$

$\boxed{slope = -1 \quad y\,int = -\dfrac{5}{3}}$

30. What is $33\dfrac{1}{3}$% of 180? $\quad$ 31. What percent of 33 is 22? $\quad$ 32. 8 is what percent of 20? $\quad$ 33. 76 is 65% of what #?

60 $\qquad\qquad$ 66.6% $\qquad\qquad$ 40% $\qquad\qquad$ 116.923

Write an equation for the line in <u>slope-intercept form</u> that passes through the given point and is *a)* parallel to the given line and *b)* perpendicular to the given line. Show all work algebraically.

34. $y = -\dfrac{1}{2}x + 2$; $(-2, 6)$

$6 = -\dfrac{1}{2}(-2) + b \qquad$ parallel: $\boxed{y = -\dfrac{1}{2}x + 5}$

$6 = 1 + b$

$b = 5$

$6 = 2(-2) + b \qquad$ perp: $\boxed{y = 2x + 10}$

$6 = -4 + b$

$b = 10$

35. $5x - 2y = 10$; $(-1, 5)$

$\dfrac{-2y}{-2} = \dfrac{-5x}{-2} + \dfrac{10}{-2}$

$y = \dfrac{5}{2}x - 5$

$5 = \dfrac{5}{2}(-1) + b$

$5 = -2.5 + b$

$b = 7.5$

parallel: $\boxed{y = \dfrac{5}{2}x + 7.5}$

perp: $5 = -\dfrac{2}{5}(-1) + b$

$5 = \dfrac{2}{5} + b$

$-\dfrac{2}{5} \quad -\dfrac{2}{5}$

$b = 4.6$

perp: $\boxed{y = \dfrac{-2}{5}x + 4.6}$