Final Review Packet

THIS IS NOT EVERYTHING YOU NEED TO KNOW. IT'S A SMALL SAMPLE. SEE YOUR REVIEW TOPIC SHEET.

1. Solve the inequality $-\dfrac{3}{4} < \dfrac{y}{8} + 1\dfrac{1}{4}$.

$-1\tfrac{1}{4}$ $-1\tfrac{1}{4}$

$(8)\,-2 < \tfrac{y}{8} \cdot 8$

$\boxed{-16 < y}$

2. Franco has x quarters, 12 one-dollar bills, and half as many ten-dollar bills as quarters. Write an expression that represents the amount of money Franco has in dollars. $x(0.25) + 12(1) + \tfrac{1}{2}x(10)$

$\tfrac{x}{2}$ \$10s

12 qs = \$4
12 1s = \$12
6 \$10 = 60

$\cancel{8} + 12 + 5x$

$\dfrac{x}{4} + 12 + 5x \;\longrightarrow\; \boxed{5\tfrac{1}{4}x + 12}$

*③. What is the solution to

$$12x = -2(-6x + 7) + 14$$

$12x = 12x - 14 + 14$

$12x = 12x$

$\boxed{\text{All real \#s}}$
$\boxed{\text{Infinite Solutions}}$

4. The graph represents Lea's distance from home over time. What is happening at the part of the graph labeled "B"?
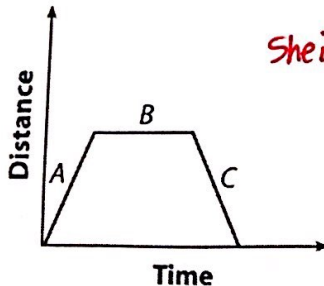
She is stopped somewhere.

5. What is the fourth term of a sequence with the recursive rule $f(1) = -3.5;\; f(n) = -2f(n-1)$ for $n > 1$?

$-3.5,\ 7,\ -14,\ 28$

$f(2) = -2(-3.5) = 7$ $f(4) = -2(-14)$
$f(3) = -2(7) = -14$ $\boxed{f(4) = 28}$

6. What are the x- and y-intercepts of

$$7x - \dfrac{7}{2}y = -49?$$

y-int
$7(0) - \tfrac{7}{2}y = -49$
$(-\tfrac{2}{7})\,\tfrac{-7}{2}y = -49(-\tfrac{2}{7})$
$y = \tfrac{8}{7}$

x-int
$7x - \tfrac{7}{2}(0) = -49$
$7x = -49$
$x = -7$

$\boxed{\begin{array}{l}(-7, 0)\\ (0, \tfrac{8}{7})\end{array}}$

7. What is the slope of a line that contains the points $(-3, 7)$ and $(7, 2)$?

$\dfrac{y_2 - y_1}{x_2 - x_1} = \dfrac{2 - 7}{7 - (-3)} = \dfrac{-5}{10} = \boxed{-\tfrac{1}{2}}$

8. Alex is buying drinks and snacks for a party and wants to spend less than \$45. Drinks cost \$2 each, and snacks cost \$4 each. He needs to buy at least 11 drinks and snacks altogether. Write a system that represents this situation.
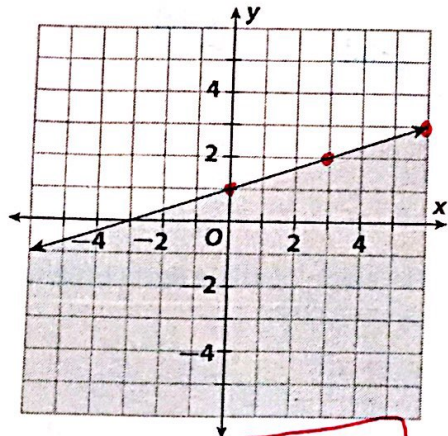
$\boxed{\begin{array}{l} 2D + 4S < 45 \\ D + S \geq 11 \end{array}}$

9. A motorcycle with an initial value of $14,000 is decreasing in value at a rate of 3% each year. At this rate, approximately what will the value of the motorcycle be in 9 years?

$$14000(0.97)^9$$

$$\approx \$10643.23$$

10. Which inequality is shown on the graph?

$$y \le \tfrac{1}{3}x + 1$$

11. Which is a recursive rule for the arithmetic sequence 22, 15, 8, 1....?

$$f(1) = 22$$
$$f(n) = f(n-1) - 7$$

12. The sum of the measures of two angles is 180°. The difference between the angle measures is 70°. What is the measure of the smaller angle?

$$x + y = 180$$
$$x - y = 70$$
$$2x = 250$$
$$x = 125$$
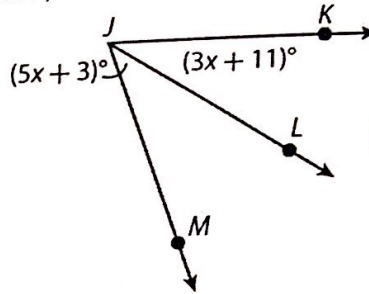$$y = 55$$

$$55°$$

In the figure, $m\angle KJL = 32°$.

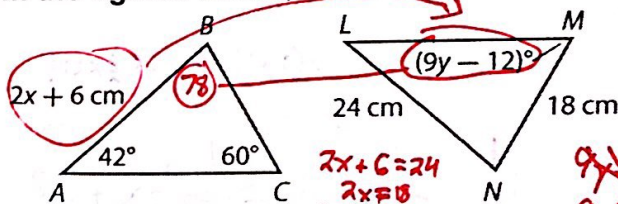$$(5x + 3)° \quad (3x + 11)°$$

$$3x + 11 = 32$$
$$3x = 21$$
$$x = 7$$

13. What is the value of x?

$$x = 7$$

Use the following information for 53–54.
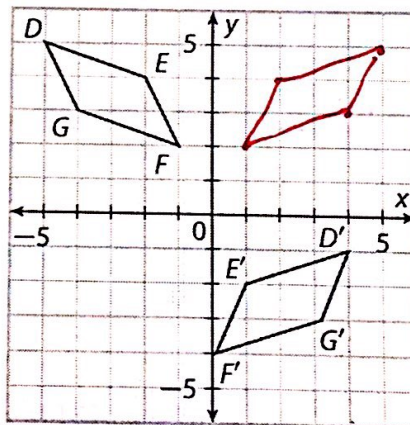**In the figures below,** $\triangle ABC \cong \triangle LMN$

$$2x + 6 \text{ cm} \quad 78 \quad 24 \text{ cm} \quad 18 \text{ cm} \quad (9y - 12)°$$

$$42° \quad 60°$$

$$2x + 6 = 24$$
$$2x = 18$$
$$x = 9$$

14. What is the value of x?

$$x = 9 \quad \text{No way to solve}$$

15. What is the value of y?

$$y = 8 \quad y = 10$$

$$9y - 12 = 60$$
$$9y = 72$$
$$y = 8$$

$$9y - 12 = 78$$
$$9y = 90$$
$$y = 10$$
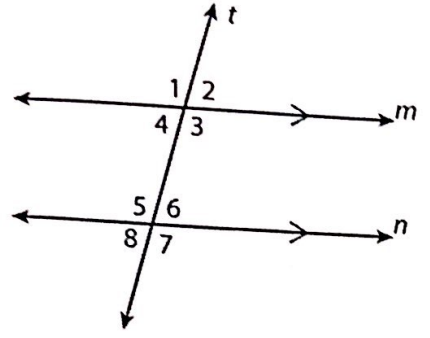

16. What transformations can you use to show that quadrilaterals *DEFG* and *D'E'F'G'* are congruent?

Reflect across y-axis
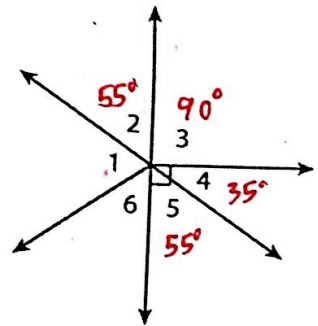
Translate using $(x - 1, y - 6)$

17. In the figure, m∠2 = 75°.

What is m∠7?

$105°$

18. In the figure, the measure of ∠2 is 55°.

55° 90° 35° 55° (handwritten on figure)

What is the measure of ∠4?

$35°$

For ~~63–64~~ 17 20, state the additional congruency statement or statements needed to prove ΔABC ≅ ΔXYZ for the given theorem.
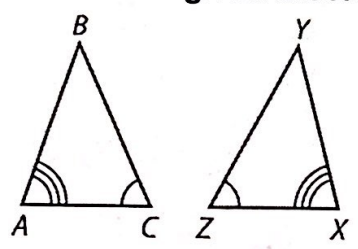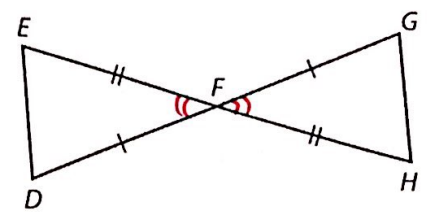
19. ASA Theorem

$\overline{AC} \cong \overline{XZ}$

20. AAS Theorem

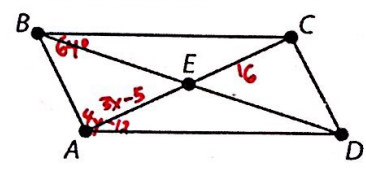$\overline{AB} \cong \overline{XY}$ or $\overline{BC} \cong \overline{YZ}$

21. Look at the figure below.

Are triangles DEF and GHF congruent? Explain why or why not. If the triangles are congruent, write a congruence statement.

Yes, SAS   ΔDEF ≅ ΔGHF

22. ABCD is a quadrilateral with $\overline{BE} \cong \overline{ED}$ and ∠BCD ≅ ∠DAB.

64° (on figure)

$3x - 5 = 16$
$3x = 21$
$x = 7$

If EC = 16 cm, m∠ABC = 64°, AE = 3x − 5, and m∠DAB = (4y − 12)°, for which values of x and y is ABCD a parallelogram?
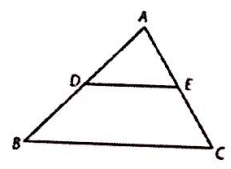
$4y - 12 + 64 = 180$
$4y + 52 = 180$
$4y = 128$
$y = 32$

~~62.~~   ~~Use the figures.~~ $X = 7$ $Y = 32$

23. State whether each quadrilateral has congruent diagonals.

A parallelogram   ○ Yes   ● No
B rhombus   ○ Yes   ● No
C rectangle   ● Yes   ○ No
D isosceles trapezoid ● Yes   ○ No
E kite   ○ Yes   ● No

24.

In the figure, $\overline{DE} \parallel \overline{BC}$ and BC = 2 DE.

If AB = 8, then AD = 4 .

If CE = 4, then CA = 8 .

25. a. Complete the frequency table.

Gender	Preferred Pet			
	Dog	Cat	Fish	Total
Male	110	197	16	323
Female	180	50	12	242
Total	290	247	28	565

b. How many males prefer dogs?

110

c. How many females do not prefer cats?

192

26. Ana interviewed 125 people to see if they liked jogging. Thirty five of the people surveyed were males. Fifty four females like jogging, and 23 males liked jogging.

What is the conditional frequency that a person does not like jogging given that the person is a female? 125-35?

90 female
54 like jogging
36 do not

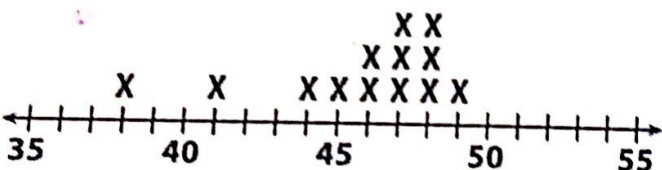$\frac{36}{90} \rightarrow \frac{4}{10}$

40%

3. What is the mean, median, and mode of the data set {32, 35, 35, 45, 49, 50}?

Mean = 41
Median = 40
Mode = 35

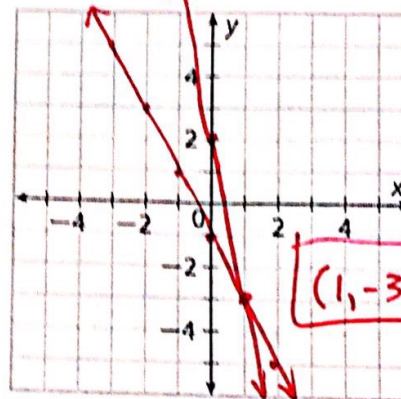**27.** Describe the distribution of the dot plot below.

```
                    X X
                  X X X
    X       X   X X X X X X
+--+--+--+--+--+--+--+--+--+--+--+--+-->
35      40      45      50      55
```

Skewed left

28. What is the interquartile range of the data represented on the plot below?

```
        73        81  84
   70   |----+----|--+--|   87
    •---|         |     |---•
+--+--+--+--+--+--+--+--+--+-->
  65    70    75    80    85    90
```
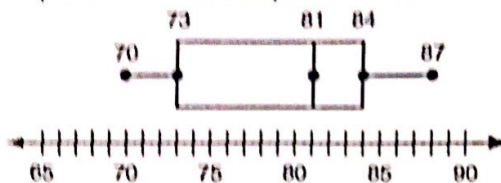
Math Scores

84-73

IQR = 11

29. Graph and solve $\begin{cases} 2x + y = -1 \rightarrow y = -2x - 1 \\ y = -5x + 2 \end{cases}$

(1, -3)

30. What is the solution to the system $\begin{cases} 3y = 5x + 22 \\ y = -5x + 8 \end{cases}$?

$+\underline{}$

$\frac{4y}{4} = \frac{30}{4}$

y = 7.5

(0.1, 7.5)

7.5 = -5x + 8
-8   -8
$\frac{-0.5}{-5} = \frac{-5x}{-5}$

x = 0.1

$\frac{0.5}{5} \rightarrow \frac{5}{50} \rightarrow \frac{1}{10}$

32. Meredith has $5.10 in quarters and dimes. She has 24 coins in all. How many quarters and how many dimes does she have?

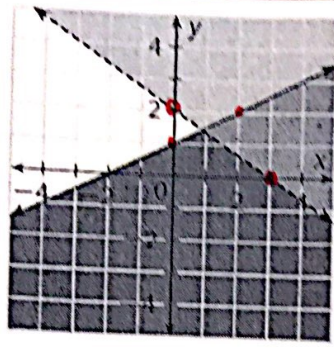$Q + D = 24 \xrightarrow{x-10} -10Q - 10D = -240$

$0.25Q + 0.10D = 5.10 \rightarrow 25Q + 10D = 510$

$\frac{15Q}{15} = \frac{270}{15}$

Q = 18
D = 6

| 18 Quarters | $4.50 |
| 6 Dimes | $0.60 |

33. Write the system of inequalities represented by the graph.

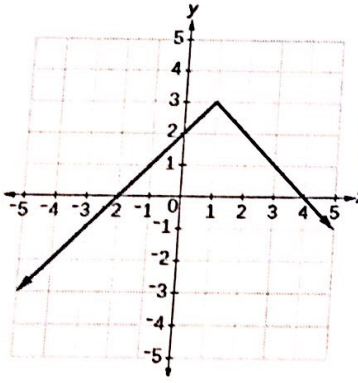$$y \le \tfrac{1}{2}x + 1$$

$$y > -\tfrac{2}{3}x + 2$$

34. Simplify

$$\frac{2x^2y^4 \cdot 4x^2y^4 \cdot 3x^1}{3x^{-3}y^2} = \frac{24x^5y^8}{3x^{-3}y^2} = \boxed{8x^8y^6}$$

35. Simplify

$$\frac{(2x^3z^2)^3}{x^3y^4z^2 \cdot x^{-4}z^3} = \frac{8x^9z^6}{x^{-1}y^4z^5} = \boxed{\frac{8x^{10}z}{y^4}}$$

36. What is the domain and range of the graph?

Domain: All real #s

Range: $y \le 3$

37. Simplify

$$3\sqrt{150}$$

$$3\sqrt{25}\sqrt{6}$$

$$3 \cdot 5\sqrt{6}$$

$$\boxed{15\sqrt{6}}$$

38. A suitcase measures 24 inches long and 16 inches high. What is the diagonal length of the suitcase? Write your answer in simplest radical form.

$$16^2 + 24^2 = x^2$$

$$\sqrt{832} = x$$

$$\sqrt{64}\sqrt{13} = x$$

$$\boxed{8\sqrt{13} = x}$$

39. Simplify. Write your answer in standard form.

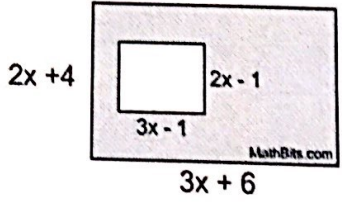$$(7 - 13x^3 - 11x) + (2x^3 + 8 + 4x^5)$$

$$\boxed{4x^5 - 15x^3 - 11x - 1}$$

40. Multiply.

$$(7x - 6)(5x + 6)$$

$$35x^2 + 42x - 30x - 36$$

$$\boxed{35x^2 + 12x - 36}$$

41. Find the area of the shaded region.

2x +4   2x - 1
3x - 1
MathBits.com
3x + 6

$$(2x+4)(3x+6) - (3x-1)(2x-1)$$

$$6x^2 + 24x + 24 - (6x^2 - 5x + 1)$$

$$6x^2 + 24x + 24 - 6x^2 + 5x - 1$$

$$\boxed{29x + 23}$$

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