Name: SAMPLE   Date: _____

6th Grade Inequality Practice

Write an inequality for the given situations below. Then write 3 numbers that would make the situation true.

The temperature was less than 32° Fahrenheit.

Inequality: $x < 32$ examples:
Numbers: ___0___ , __17__ , __31__

The school track team must have at least 10 runners to compete at the meet.

Inequality: $x \geq 10$ Numbers: __10__ , __11__ , __12__

An elevator can carry no more than 15 people.

Inequality: $x \leq 15$ Numbers: ___2___ , ___7___ , __11__

Which statement can be modeled by x + 3 ≤ 12?

(A) Sam has 3 bottles of water. Together, Sam and Dave have at most 12 bottles of water.

B. Jennie sold 3 cookbooks. To earn a prize, Jennie must sell at least 12 cookbooks.

C. Peter has 2 baseball hats. Peter and his brothers have fewer than 12 baseball hats.

D. Kathy swam 3 laps in the pool this week. She must swim more than 12 laps.

Write an inequality that represents the situation, then solve.

Natasha wants to treat her friends to the movies. The movie tickets cost $11 each and she also wants to spend $21 worth of popcorn and candy for her friends to share. She can spend under $131. Write an inequality to represent how many people she can treat to the movies. Solve the inequality.

$$11x + 21 < 131$$
$$ - 21 \quad | \quad -21$$
$$11x \qquad < 110$$
$$\div 11 \qquad | \quad \div 11$$

$$\boxed{x < 10}$$

A band wants to create a CD of their last concert. To create the CDs, the cost will be $350 advertisement fee plus $3 per CD. Write an inequality that represents how many CDs they can buy with a maximum of $1225. Solve the inequality.

$$350 + 3x \leq 1225$$
$$-350 \qquad | -350$$
$$3x \leq 875$$
$$\div 3 \qquad \div 3$$

$$291.666$$
$$3\overline{)875}$$
$$\underline{-6\downarrow}$$
$$27\downarrow$$
$$\underline{-27\downarrow}$$
$$05$$

$$\boxed{x \leq 291}$$

A company wants to order company polos at a discount. The cost will include $24 per shirt and a $50 delivery fee. Write an inequality that represents how many shirts they must buy if they spend a minimum of $200 in order to receive the discount.

$$24x + 50 \geq 200$$

$$\begin{array}{c c}
\quad -50 \quad | \quad -50 \\
\hline
24x \quad\quad \geq 150 \\
\div 24 \quad\quad | \div 24 \\
\hline
x \quad\quad \geq 7
\end{array}$$

$$24\overline{\smash{\big)}150} \begin{array}{l} 6.25 \\ \end{array}$$
$$-144$$
$$6$$

$$\boxed{x \geq 7}$$

The length of a rectangle is 5 times its width. The perimeter of the rectangle is at most 104 meters. Write an inequality that represents the greatest possible dimensions of this rectangle.

$$\text{Perimeter} = 2w + 2\ell \leq 104$$
$$2w + 2(5w) \leq 104$$
$$\boxed{12w \leq 104}$$
$$\div 12 \qquad | \qquad \div 12$$
$$w \leq 8.\overline{6}\, m$$
$$\text{length} \leq 5 \times 8.\overline{6} = 43.\overline{3}\, m$$

$$12\overline{\smash{\big)}104.0} \begin{array}{l} 8.\overline{6} \\ \end{array}$$
$$-94 \downarrow$$
$$100$$

Challenge:
Members of the band boosters are planning to sell programs at football games. The cost to print the programs is $150 plus $0.50 per program. They plan to sell each program for $2. Write an inequality for the situation. How many programs must they sell to make a profit of at least $500?

$$\text{Profit} - \text{expenses} \geq 500$$
$$2x - 150 - 0.50x \geq 500$$
$$1.5x - 150 \geq 500$$
$$+150 \qquad | +150$$
$$\overline{\hspace{2cm}}$$
$$1.5x \geq 650$$
$$\div 1.5 \qquad \div 1.50$$

$$\boxed{x \geq 434}$$

The band must sell 434 or more programs.

$$1.5\overline{\smash{\big)}650.00} \begin{array}{l} 433.3 \\ \end{array}$$
$$-60$$
$$\overline{55}$$

A club can buy ready-made shirts for $14.50 each. Alternately, it can buy plain T-shirts for $6.25 each, fabric paint for $35.70, and a pack of stencils for $8.50. Write an inequality to represent the situation. For how many shirts is stenciling plain T-shirts cheaper than buying ready-made shirts?

$$\text{Ready-made shirts cost} \geq \text{Plain} + \text{paint} + \text{stencils}$$
$$14.50x \geq 6.25x + 35.70 + 8.50$$
$$14.50x \geq 6.25x + 44.20$$
$$-6.25x \qquad | \quad -6.25x$$
$$\overline{\hspace{3cm}}$$
$$8.25x \geq 44.20$$
$$\div 8.25 \qquad | \quad \div 8.25$$

$$\boxed{x \geq 6}$$

It is cheaper to buy 6 or more plain T-Shirts