

## Problem Set

1. Match each problem to the inequality that models it. One choice will be used twice.

_____	The sum of three times a number and $-4$ is greater than 17.	a. $3x + -4 \geq 17$
_____	The sum of three times a number and $-4$ is less than 17.	b. $3x + -4 < 17$
_____	The sum of three times a number and $-4$ is at most 17.	c. $3x + -4 > 17$
_____	The sum of three times a number and $-4$ is no more than 17.	d. $3x + -4 \leq 17$
_____	The sum of three times a number and $-4$ is at least 17.	

2. If  $x$  represents a positive integer, find the solutions to the following inequalities.

- |                    |                          |
|--------------------|--------------------------|
| a. $x < 7$         | f. $-x \geq 2$           |
| b. $x - 15 < 20$   | g. $\frac{x}{3} < 2$     |
| c. $x + 3 \leq 15$ | h. $-\frac{x}{3} > 2$    |
| d. $-x > 2$        | i. $3 - \frac{x}{4} > 2$ |
| e. $10 - x > 2$    |                          |

3. Recall that the symbol  $\neq$  means *not equal to*. If  $x$  represents a positive integer, state whether each of the following statements is always true, sometimes true, or false.

- |             |                |
|-------------|----------------|
| a. $x > 0$  | e. $x \geq 1$  |
| b. $x < 0$  | f. $x \neq 0$  |
| c. $x > -5$ | g. $x \neq -1$ |
| d. $x > 1$  | h. $x \neq 5$  |

4. Twice the smaller of two consecutive integers increased by the larger integer is at least 25.

Model the problem with an inequality, and determine which of the given values 7, 8, and/or 9 are solutions. Then, find the smallest number that will make the inequality true.

5.

- The length of a rectangular fenced enclosure is 12 feet more than the width. If Farmer Dan has 100 feet of fencing, write an inequality to find the dimensions of the rectangle with the largest perimeter that can be created using 100 feet of fencing.
- What are the dimensions of the rectangle with the largest perimeter? What is the area enclosed by this rectangle

6. At most, Kyle can spend \$50 on sandwiches and chips for a picnic. He already bought chips for \$6 and will buy sandwiches that cost \$4.50 each. Write and solve an inequality to show how many sandwiches he can buy. Show your work and interpret your solution.