

Lesson 4: Creating & Solving Linear Inequalities

In this lesson, we will practice setting up inequalities from real-life scenarios. This will lead us into graphically representing these inequalities in the next lesson.

Exercise #1: A construction worker earns \$53 per hour. She buys lunch off of the lunch-truck for \$12 each day. How many hours must she work in order to earn more than \$360 each day, after paying for lunch?

Exercise #2: A taxi service charges \$6.00 as a flat fee plus an additional \$1.00 per mile driven. How many miles can a customer with \$20 afford to travel?

Exercise #3: Admission to the carnival is \$5.00 plus \$1.25 for each ride. How many rides can a child go on if he arrives at the carnival with \$12.00?

In Exercises #1 - 3, the inequalities were all one variable inequalities. We will now take a look at some two variable inequalities.

Exercise #4: Isolate y for each of the following.

a) $4x + 2y \geq 16$

b) $2x - 3y \leq 12$

c) $6x + 6y > 24$

d) $-8y - 4x < 16$

Exercise #5: What is the largest integer a , that satisfies the following inequality?

$$3a - 5a + 6 > 10$$

Lesson 4 Extra Practice

EP1. Fill in the table below with the correct inequality ($<$, $>$, \leq , \geq) that is used with the corresponding words or phrases.

Word/Phrase	Inequality
a maximum of	
more than	
at least	
a minimum of	
below	
no more than	
at most	
above	
fewer than	

EP2. For each of the following scenarios set up and solve an inequality that represents the given situation.

a) Grace's hair is currently 5 inches long, and grows at a rate of 1.5 inches per month. Grace wants her hair to be at least 14 inches long. What is the least number of months she must wait?

b) Three times a number x , subtracted from 18 is less than -90 . What is the smallest possible value of x ?

EP3. Isolate y for each of the following, placing the inequality in slope-intercept form.

a) $-12x + 18y > 90$

b) $28x + 35y \geq 168$

c) $\frac{1}{10}x + \frac{1}{2}y < 2$

d) $0.45x - 1.8y > 27$

e) $5x + 2y > 3x$

f) $8x - 12y > 4(2x + 5) - 20$