For #'s 26 – 27, set up an equation in order to solve the problem. Define all unknowns.

26. At the local chocolatier, Mark is going to purchase a candy jar and fill it with caramels and taffies. He wants to mix one part caramels and two parts taffies. Caramels sell for $1.50 per lb and taffies sell for $1.25 per lb. If he spent $10 on the candy, how many lbs of each type did he purchase?

x: the number of pounds of caramels purchased
2x: the number of pounds of taffies purchased

$1.50x + 1.25(2x) = 10$
$1.5x + 2.5x = 10$
$4x = 10$
$\frac{4x}{4} = \frac{10}{4}$
$x = 2.5$ $\qquad 2x = 2(2.5) = 5$

Mark purchased $2\frac{1}{2}$ lbs of caramels and 5 lbs of taffies.

Check

2.5 lbs of caramels = $3.75 (2.5 lbs × $1.50)

5 lbs of taffies = $6.25 (5 lbs × $1.25)

Total: $10 ($3.75 + $6.25 = $10)

Table Set Up

Item	Quantity	Value (price per lb)	Total Value (amount of $ spent)
lbs of caramel	x	$1.50	1.50x
lbs of taffies	2x	$1.25	1.25(2x)

27. Using only 32-cent and 20-cent stamps, Cheri put $3.36 postage on a package. She used double the amount of 32-cent stamps than 20-cent stamps. Determine how many stamps she used of each kind.

x: the number of 20-cent stamps used for postage (4)
2x: the number of 32-cent stamps used for postage (8)

$0.20x + 0.32(2x) = 3.36$
$20x + 32(2x) = 336$ ← multiplied both sides by 100
$20x + 64x = 336$
$\frac{84x}{84} = \frac{336}{84}$
$x = 4$

4 20-cent stamps and 8 32-cent stamps

Check

4 20 cent stamps = $0.80
8 32 cent stamps = $2.56

Total: $3.36 ($0.80 + $2.56 = $3.36)

Table Set Up

Item	Quantity	Value (worth of stamp)	Total Value (amount of $ spent)
20-cent stamps	x	$0.20	.20x
32-cent stamps	2x	$0.32	.32(2x)

4) Inequalities

28. Which number is part of the solution set to the inequality **5x + 3 > 38**?

(1) 5 (3) 6

(2) 7 (4) 8

(4) 8

$5x + 3 > 38$

$\frac{5x}{5} > \frac{35}{5}$

$x > 7$

If you replace x with 5, 6 or 7, you will see that each value does not make the inequality statement true.

29. Which inequality represents the accompanying graph?

(1) $-3 \le x < 4$ (3) $-3 \le x \le 4$

(2) $-3 < x < 4$ (4) $-3 < x \le 4$

(4) $-3 < x \le 4$

The graph shows all numbers less than or equal to 4 (closed circle) and greater than -3 (open circle).

30. An electronics store sells DVD players and cordless telephones. The store makes a $75 profit on the sale of each DVD player (***d***) and a $30 profit on the sale of each cordless telephone (***c***). The store wants to make a profit of at least $255.00 from its sales of DVD players and cordless phones. Which inequality describes this situation?

(1) $75d + 30c < 255$

(2) $75d + 30c \le 255$

(3) $75d + 30c > 255$

(4) $75d + 30c \ge 255$

(4) $75d + 30c \ge 255$

"*at least*" translates into *greater than or equal to*

31. a) Write a compound inequality statement that represents the graph pictured below.

$x \le -5$ or $x > 3$

b) Represent the solution set in interval notation.

$(-\infty, -5] \cup (3, \infty)$

32. David has two jobs. He earns $8 per hour babysitting his neighbor's children and he earns $11 per hour working at the coffee shop.

a) Write an inequality to represent the number of hours, ***b***, babysitting and the number of hours, ***c***, working at the coffee shop that David will need to work in order to earn a minimum of $200.

$8b + 11c \geq 200$

b) David worked 15 hours at the coffee shop. Use the inequality to find the number of full hours he must babysit to reach his goal of $200.

$8b + 11c \geq 200$

$8b + 11(15) \geq 200$

$8b + 165 \geq 200$

$8b \geq 35$

$\frac{8b}{8} \geq \frac{35}{8}$

$b \geq 4.375$

David will need to babysit for 5 hours.

Check

$8(5) + 11(15) \geq 200$

$\$40 + \$165 \geq \$200$

$\$205 \geq \$200$

David reaches his goal!

33. Solve the inequality below to determine and state the smallest *integer* value of **x** that will make the statement true.

$27x - 20 \leq 5(7x - 2)$

$27x - 20 \leq 35x - 10$

$-35x \quad -35x$

$-8x - 20 \leq -10$

$+20 \quad +20$

$\frac{-8x}{-8} \leq \frac{10}{-8}$

$x \geq -1.25$ (reverse the inequality symbol when dividing both sides by a negative number)

The smallest integer value that will make the inequality true is -1.

Check

$27(-1) - 20 \leq 5(7(-1) - 2)$

$-27 - 20 \leq 5(-7 - 2)$

$-47 \leq -45$ *true statement*

Try one value smaller (-2)

$27(-2) - 20 \leq 5(7(-2) - 2)$

$-54 - 20 \leq 5(-14 - 2)$

$-74 \leq -80$ *false statement*