2.6 Modeling with Inequalities

Examples:

1. Five times a number, decreased by 24, is greater than 3 times the number. Find the possible numbers.

let x = number

$5x - 24 > 3x$

$-24 > 3x - 5x$

$-24 > -2x$

$\dfrac{-24}{-2} < x$

$12 < x$

> The number is greater than 12.

2. Sara has $53.50 in her pocket and wants to purchase shirts at a sale price of $14.95 each. How many shirts can she buy?

let x = # of shirts (14.95)

$14.95x \leq 53.50$

$x \leq \dfrac{53.50}{14.95}$

$x \leq 3\dfrac{173}{299}$

> 3 Shirts

3. The length of a rectangle is 5 cm more than its width. The perimeter of the rectangle is at least 66 cm. Find the minimum measures of the length and width.

let x = width

$x + 5$ = length

$2l + 2w = P$

$2(x+5) + 2(x) \geq 66$

$2x + 10 + 2x \geq 66$

$2x + 2x \geq 66 - 10$

$4x \geq 56$

$x \geq \dfrac{56}{4}$

$x \geq 14$

$P \geq 66\,cm$

$x = 14$

$x + 5$

$14 + 5$

19

> width = 14 cm
> length = 19 cm

4. Mrs. Scott decided that she would spend no more than $120 to buy a jacket and a skirt. If the price of the jacket was $20 more than 3 times the price of the skirt, find the highest possible price of the skirt.

let x = price of skirt

$3x + 20$ = price of jacket

$x + (3x + 20) \leq 120$

$x + 3x + 20 \leq 120$

$x + 3x \leq 120 - 20$

$4x \leq 100$

$x \leq \dfrac{100}{4}$

$x \leq 25$

> The highest price of the skirt is $25.

HOMEWORK

Worksheet - HW 2.6 Modeling with Inequalities