

# Warmup 11/ $(20 \cdot 1.1^1)$

In one physical education class,  $\frac{5}{8}$  of the students were playing basketball. After 3 more students joined, 18 students were playing basketball.

$$\frac{5}{8}x = 18 + 3x$$

$$18 = \frac{5}{8}x - 3$$

$$\frac{5}{8}(x + 3) = 18$$

$$\frac{5}{8}x + 3 = 18$$

$$\frac{5}{8}x = 18 - 3$$

$$\frac{5}{8}x + 3x = 18$$

- 1) Copy all the equations that could represent this situation.
- 2) Find how many students were in the class. **24 students**
- 3) Check your solution by substituting it into one of the valid equations.

**Solve each equation:**

*a.*  $5x + 75 = 75 + 5x$

*b.*  $5x + 75 = -5x + 75$

*c.*  $5x - 75 = 5x + 75$

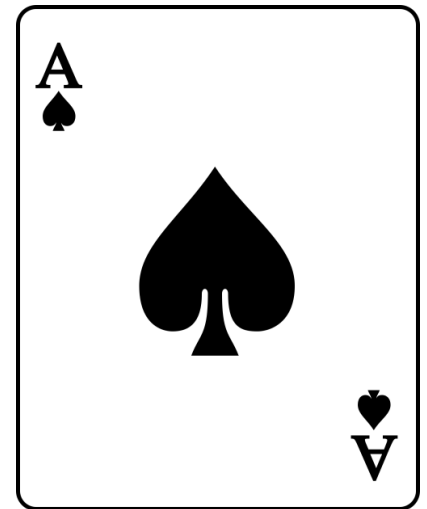
*d.*  $75 - 5x = 5x - 75$

**Infinite Solutions**

**$x = 0$**

**No solution**

**$x = 15$**



**Solve the equation:**

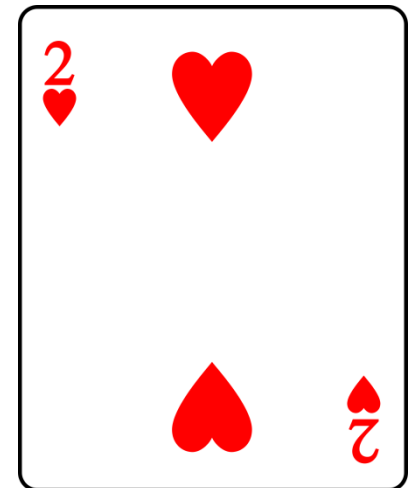
$$4 + 2(6x - 10) - 9x = -4(3x - 3x + 12 - 8) \quad (\text{This is just 4})$$

**LEFT SIDE SIMPLIFIES TO:  $3x - 16$**

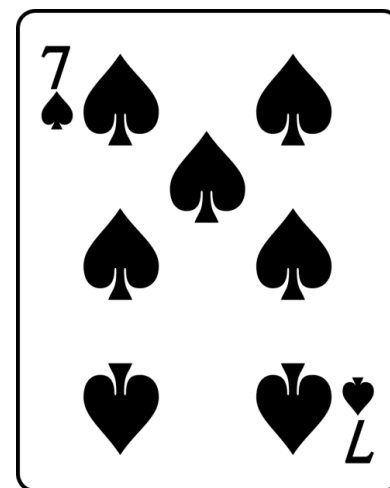
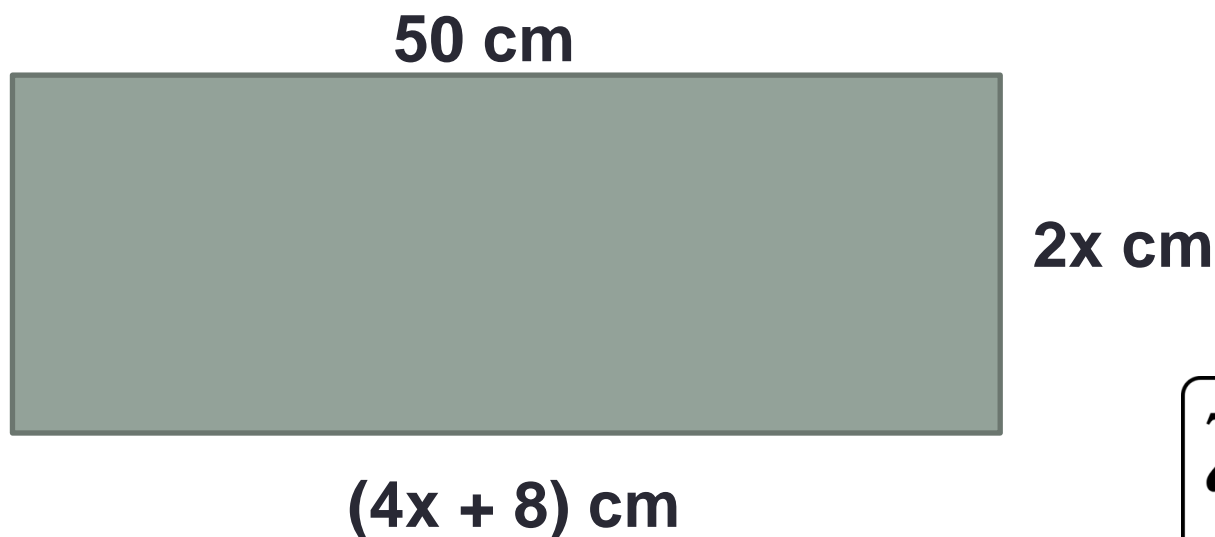
**RIGHT SIDE SIMPLIFIES TO:  $-16$**

**So you should get:**  
 **$3x - 16 = -16$**

$$x = 0$$



Find the perimeter and area of this rectangle.



**Set  $4x + 8 = 50$ ,  $x = 10.5$**

**Perimeter = 142 cm**

**Area = 1050 cm<sup>2</sup>**

**Doc, Grumpy, Bashful, Dopey:  $x$    Happy:  $3x$    Sneezy:  $x - 6$**

- Doc, Grumpy, Happy, Sleepy, Bashful, Sneezy, and Dopey were all mining for jewels. Doc, Grumpy, Bashful, and Dopey all found the same amount of jewels. Happy was extra energized and found triple the amount that Doc, Grumpy, Bashful, and Dopey each found. Sneezy was too busy sneezing and found 6 fewer jewels than Doc, Grumpy, Bashful, and Dopey each found. Sleepy fell asleep and didn't find any jewels. Altogether, the dwarves found 90 jewels. How many jewels did each dwarf find?

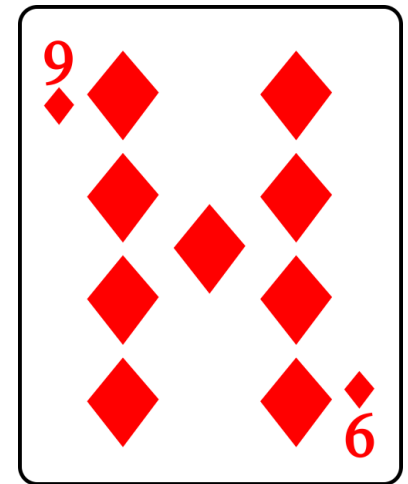
$$x + x + x + x + 3x + (x - 6) = 90 \quad \text{Doc, Grumpy, Bashful, Dopey: } 12$$

$$8x - 6 = 90$$

$$x = 12$$

**Happy: 36**

**Sneezy: 6**



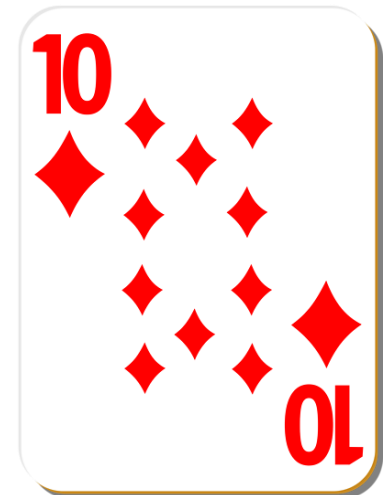
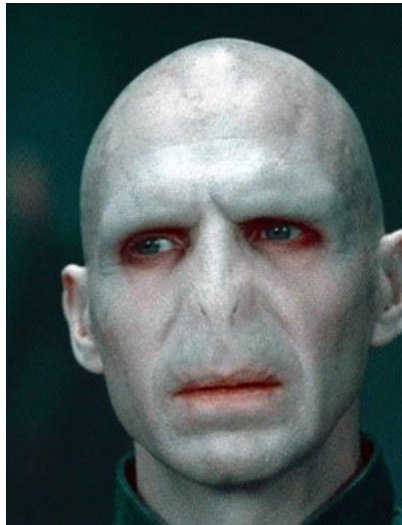
$x = \# \text{ of days}$

$$90 - 3x = 1.5x$$

20 days;

both hair = 30 feet

- Rapunzel's hair was originally 90 feet long, but something strange has happened, and her hair is starting to *shrink*. Her hair is getting 3 feet shorter every day. Meanwhile, Lord Voldemort's head was originally bald, but something equally strange has happened, and his hair is growing 1.5 feet per day.
- Define a variable.**
  - Write an equation that would find out when their hair will be the same length.**
  - How long will it take for Rapunzel's and Lord Voldemort's hair to be the same length?**
  - How long will their hair be at this point?**



**FIRST subtract 4 on both sides,  
then multiply both sides by 4,  
then solve from there**

- Solve the equation. Then check your answer. If your answer doesn't work, your solution is incorrect!

$$\frac{4x - 4}{4} + 4 = 44$$

$$\frac{4x - 4}{4} = 40$$

$$4x - 4 = 160$$

$$4x = 164$$

$$x = 41$$



- From ground level to the tip of the torch, the Statue of Liberty and its pedestal are 92.99 meters tall. The pedestal is 0.89 meter taller than the statue. How tall is the Statue of Liberty? (Just the statue part)



**Statue =  $s$**

**Pedestal =  $s + 0.89$**

**Statue + Pedestal = 92.99**

**$s + (s + 0.89) = 92.99$**

**$s = 46.05$  meters**

