1. One train is 2 times faster than another train. Both trains move toward each other. What is the speed of each train if the starting distance is 33 km and they meet in one hour?

2. **Solve equations:**

$$5 - \frac{1}{x^2} = 1$$

$$30 - \frac{1}{x^3} = 3$$

$$0.12 + x = 0.4$$

$$x - 5.4 = \frac{1}{6}$$

$$3 - x = 0.003$$

$$x + \frac{1}{8} = 1.375$$

3. Two lines cross. Peter measured two adjacent angles at this crossing and discovered that one of them is two times larger than another. Find these angles. (think, what kind of angles are formed when two lines cross each other?)

4. **What angles do the clock hands form when they show:**

(a) 6:00   *(b) 3:00*   *(c) 4:00*

5. **Find n**

- $5^{2n+1} = 5^7$

- $15^n = 3^6 \cdot 5^2 \cdot 5^3 \cdot 3^{-1}$

6. The speed of sound is approximately 768 miles per hour. When an object travels through the air faster than the speed of sound, it creates sonic boom, which sounds like an explosion to the human ear. Write an inequality to represent the speeds at which a moving object created sonic boom. Use "s" for speed.

7. We want to go to the beach tomorrow if the temperature is equal to or warmer than 85ºF. Write an inequality to represent the temperatures (t) at which we will go to the beach.

8. We want to go skiing if the temperature is not colder than 10ºF and not warmer than 35ºF. Write an inequality to represent the temperatures (t), at which we will go skiing.

9. Solve inequalities:

a) $3(5x - 1) < 5x + 29$

b) $2(16 - x) > 4x - 8$

10. Open the parenthesis:

a) $p - (-n + r - s) =$
b) $c - (b + c - a) + (-a + b) =$
c) $(d - m) - b - (-m + x + d) + x =$
d) $k - (y - c) + (d - c - y) + (-k + d) =$

11. Points a, 0, and b are marked on the number line below:

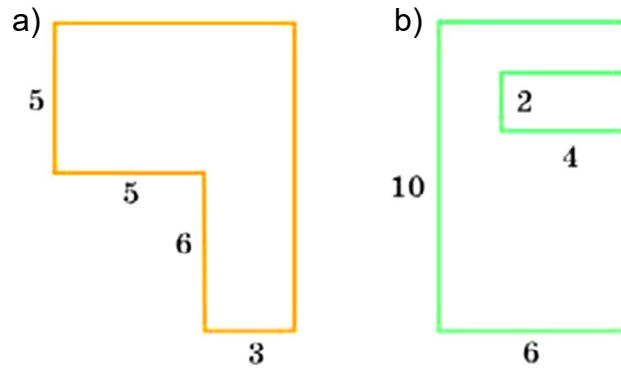

Which of the following expressions is true?

1) $a + b > 0$ or $a + b < 0$ 3) $ab > 0$ or $ab < 0$
2) $a - b > 0$ or $a - b < 0$ 4) $\frac{b}{a} > 1$ or $\frac{b}{a} < 1$

12. Find the areas of the figures on the picture below (sizes are given in centimeters; all angles are right angles)

a)

5

5

6

3

b)

2

4

10

6

13. Rewrite the following expressions without parenthesis (use the distributive properties):

Example:

$$-3(x - y) = (-3) \cdot x + (-3) \cdot (-y) = -3x + 3y$$

    a. $-(a - b)$

    b. $-3(c + d)$

    c. $2(-x + y)$

    d. $x(-x + 2y + 1)$

    e. $-y(x - y + 3)$