Math 5b, homework 8.

1. Write the following statements as mathematical expressions:

Example:

The product of 3 and a difference between numbers x and y:

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

a. Product of 7 and a sum of numbers a and b.
b. Sum of 10 and a product of numbers *x* and *y*.
c. Difference between number *c* and a product of numbers 4 and *d*.
d. Two times the product of numbers *a* and *b*.

2. Factor out the common factor;

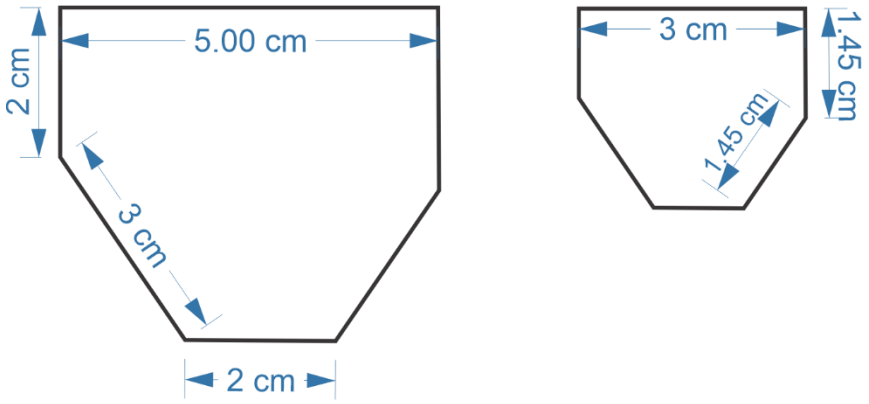
$a.\ x^2 - x;$ $b.\ a + a^2;$ $c.\ 2xy - x^3;$ $d.\ b^3 - b^2$

$e.\ a^4 + a^3b;$ $f.\ x^2y^2 - y^4;$ $g.\ 4a^6 - 2a^3b;$ $h.\ 9x^4 - 12x^2y^4;$

3. Simplify the following expressions (combine like terms):

$a.\ (x^2 + 4x) + (x^2 - x + 1) - (x^2 - x);$
$b.\ (a^5 + 5a^2 + 3a - a) - (a^3 - 3a^2 + a);$
$c.\ (x^2 - 3x + 2) - (-2x - 3);$
$d.\ (abc + 1) + (-1 - abc);$

4. Small shape below is a reduced copy of the big one. Find all missing sides. Find the ratio of the perimeters.



5. Solve the equations, use the property of proportion:

$a.\ \ 4:(x-3) = 2:3;$ $b.\ \dfrac{2y + 1.6}{0.8} = \dfrac{30}{2.5};$

$c.\ \dfrac{1.5}{4x - 1} = \dfrac{0.4}{x + 4}$ $d.\ \dfrac{5y}{1\frac{1}{3}} = \dfrac{y - 0.9}{0.2}$

6. Represents as a decimal:

Example:

$$\frac{1}{2^2 \cdot 5} = \frac{5}{2^2 \cdot 5^2} = \frac{5}{10^2} = 0.05$$

$a.\ \frac{1}{2^3};$ $b.\ \frac{1}{2 \cdot 5^3};$ $c.\ \frac{1}{2^5 \cdot 5^3};$ $d.\ \frac{1}{5^4 \cdot 2^5}$

7. In 2020 Mary's salary was $75000 per year. In 2021 the salary was increased by 3%. In 2022 Mary got another 5% raise. What was Mary's salary in 2022?