



Name:

Date:

Grade:

Worksheet

Q1) Expand the following expressions.

Look at these Examples, then solve the question!

- $(2x+1)^2 = (2x)^2 + (1)^2 + 2(2x)(1) = 4x^2 + 1 + 4x$
- $(2x-1)^2 = (2x)^2 + (1)^2 - 2(2x)(1) = 4x^2 + 1 - 4x$
- $(x-3)(x+3) = x^2 - 3^2 = x^2 - 9$
- $(3x + 4) + (6x - 2) = 3x + 4 + 6x - 2 = 3x + 6x + 4 - 2 = 9x + 2$
- $(7x + 5) - (4x + 3) = 7x + 5 - 4x - 3 = 7x - 4x + 5 - 3 = 3x + 2$
- $(2x + 1)(x - 3) = (2x)(x) - (2x)(3) + 1(x) - 1(3)$
 $= 2x^2 - 6x + x - 3$
 $= 2x^2 - 5x - 3$

1. $(2x+3) + (x - 1) =$

2. $(x+2) + (3x - 1) =$

3. $(2x + 3) + (4x + 3) =$

4. $(5x+2) - (2x -3) =$

5. $(3x - 1)^2 =$



$$6. (2x - 5)^2 =$$

$$7. (x + 4)^2 =$$

$$8. (2x + 1)^2 =$$

$$9. (3x - 4)(3x + 4) =$$

$$10. (2x - 5)(2x + 5) =$$

Q2) Factorize the following expressions.

• Look at these examples, then solve the question

By common, $E(x) = 2x^2 + 13x = x(2x+13)$

By Rule, $F(x) = x^2 - 9 = (x-3)(x+3)$

$$1. x^3 - 4x =$$

$$2. x^2 - 25 =$$

$$3. 9 - x^2$$

$$4. (3x-1)^2 - (x-2)(3x-1) =$$

$$5. (2x-5)^2 - (x+4)^2 =$$

Q3) Given that:

$$E(x) = (3x - 1)^2 - (1 - 3x)(x + 7)$$

$$F(x) = 2x^2 + 3x$$

1. Develop and reduce $E(x)$.

2. Show that $E(x) = 2(3x - 1)(2x + 3)$

3. Factorize $F(x)$.



4. Let $G(x) = \frac{E(x)}{F(x)}$

- For what values of x , is $G(x)$ defined?
- Simplify $G(x)$.
- Does the rational equation $G(x) = \frac{22}{3}$ admit a solution? Justify?

Q4) in the following figures, the unit of length is cm



ABCD is a square of side $AB = x+3$ where $0 < x < 2$

EFIH is a rectangle such that $IH = 4 - x^2$, $EH = 4$ cm and $IG = 10$ cm

FIG is right triangle where FI is the height.

- Express in terms of x , the area S_1 of rectangle EFIH.
- Calculate in terms of x , the area S_2 of triangle FIG.
- Determine the area $A(x)$ of square ABCD.
- Denote by $B(x)$ the area total shape EFGH.
Verify that $B(x) = 36 - 4x^2$
- Show that $B(x) = 4(3 - x)(3 + x)$
- Calculate x if the area of ABCD is the same as that of EFGH.

REMEMBER:

Area of square = side \times side or = (side)²

Developmental Action Without Borders

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Area of rectangle = length x width

$$\text{Area of triangle} = \frac{\text{Height} \times \text{base}}{2}$$