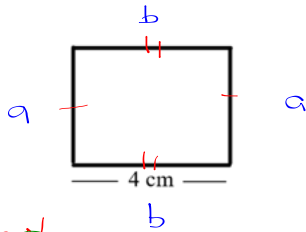


Name : _____

Exit Ticket:

The perimeter of the below rectangle is 14 cm. Find its area.



$$P = \underline{a} + \underline{a} + \underline{b} + \underline{b}$$

$$P = 2a + 2b$$

$$P = 2(a + b)$$

gcf: 2

$$P = 2a + 2b$$

$$P = 2(a + b)$$

$$14 = 2a + 2(4)$$

info

$$p = 14$$

$$b = 4$$

- . sub -
- . simple.
- . solve

$$14 - 8 = 2a + 8 - 8$$

$$\frac{6}{2} = \frac{2a}{2}$$

$$a = 3$$

$$A = l \cdot w$$

$$A = 4 \cdot 3$$

$$A = 12 \text{ cm}^2$$



<i>Tentative Schedule</i>	
March 2024	
Date	
25	MTH-3053: Geometric Representation – L1 – Difference between Expressions and Equations. Combining Like Terms. Simplifying Algebraic Expressions containing Exponential Numbers and Radicals. Substitution Practice. (see 3051)
26	MTH-3053: Geometric Representation – L2 – Laws of Exponents to Simplify Exponential Expressions.
27	MTH-3053: Geometric Representation – L3 – Exponential Expressions cont'd. Scientific Notation. Laws of Radicals to Simplify Expressions with Radicals
28	MTH-3053: Geometric Representation – L4 – Operations on Polynomials. Factoring Polynomials (Greatest Common Factor Method)
29	NO SCHOOL – GOOD FRIDAY
April 2024	
1	NO SCHOOL – EASTER MONDAY
2	MTH-3053: Geometric Representation – L6 – Solving using Pythagorean Theorem for Right Triangles. Two Special Right Triangles.
3	MTH-3053: Geometric Representation – L5 – Multiplying Two Binomials (FOIL). Using Substitution and Solving to Find the Algebraic Expression Representing Perimeter and Area of 2D Shapes.
4	MTH-3053: Geometric Representation – L7 – Representations/Drawings of 3D Solids using Projections: Central Projections (Perspectives with One and Two Vanishing Points), Parallel Projections (Oblique and Axonometric Perspectives), Orthogonal Projections (Top, Front, Side View/Perspective)
5	In-class assignment
8	MTH-3053: Geometric Representation – L8 – MINI-DAY Metric Unit Conversions. Prisms versus Pyramids and Their Nets AND Take-up In-class assignment



Lesson 6 : Multiplying Two Binomials (FOIL) and Algebraic Expressions in Solving Questions April 3rd, 2024

Recall :

$$2x(3x-4)$$

not the same

$$2x \cdot 3x - 4$$

$$6x^2 - 8x$$

$$6x^2 - 4$$

Binomial x Binomial : (pg 35)

ex.

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

FOIL

nota bene: each "arm" rep. x

$$\underline{4x^2} + \underline{12x} + \underline{2x} + 6$$

$$4x^2 + 14x + 6$$

⚠ careful w negative signs

ex. 1st way @ start

$$(2x - 3)(4x - 5)$$

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

$$8x^2 - 10x - 12x + 15$$

$$8x^2 - 22x + 15$$

$$r a^n x \cdot s a^m y$$

$$= (r \times s) a^{n+m} x^r y^s$$

law of signs			
x	÷	adjacent	signs
+	+	=	+
-	-	=	+
-	+	=	-

2nd way (no mistake)

ex. $(2x^2y - 4)(3xy^3 - 2xy)$

$$6x^3y^4 - 4x^3y^2 - 12xy^3 + 8xy$$

ex. 1 You do:

$$(3x^2 + 4)(x^2 + 2)$$

$$3x^4 + 10x^2 + 8$$

ex. 2

$$(2xy + 3)(-xy^2 - 5y)$$

$$-2x^2y^3 - 13xy^2 - 15y$$

ex. 3

$$(4x - y)(3x + 3y)$$

$$12x^2 + 9xy - 3y^2$$

think about the base
of this exponent

ex. 4

$$(x^2y^2 - 5xy)^2$$

$$x^4y^4 - 10x^3y^3 + 25x^2y^2$$

ex. 5

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

$$7x + 8$$

#4

$$(x^2y^2 - 5xy)^2$$

$$(x^2y^2 - 5xy)(x^2y^2 - 5xy)$$

$$x^4y^4 - 5x^3y^3 - 5x^3y^3 + 25x^2y^2$$

$$x^4y^4 - 10x^3y^3 + 25x^2y^2$$

#5

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

$$3x + 4x + 8$$

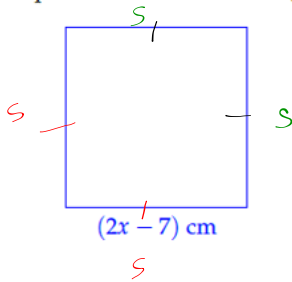
$$7x + 8$$

$()^2 = () ()$	$()$
exp #:	base:
$x^2 = x \cdot x$	x
$y^2 = y \cdot y$	y
$10^2 = 10 \cdot 10$	10
$i^2 = i \cdot i$	i

Evaluating Perimeter of Polynomials

4.1 Practice: Polynomials and Perimeter (we want perimeter in terms of x)

(1) Determine the simplified algebraic expression for the perimeter of the following square:



$$P = s + s + s + s$$

$$P = 4s$$

$$P = 4(2x - 7)$$

$$P = 8x - 28$$

evaluate/simplify

S
A
M
E
B

solving/isolating

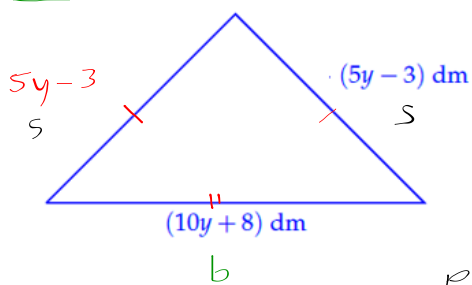
Info

$$s = 2x - 7$$

sub
in
use
brackets

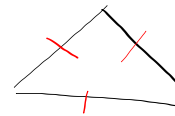
(2) Determine the simplified algebraic expression for the perimeter of the following isosceles triangle:

→ Label



isosceles

equilateral



scalene



info

$$s = 5y - 3$$

$$b = 10y + 8$$

$$P = s + s + b$$

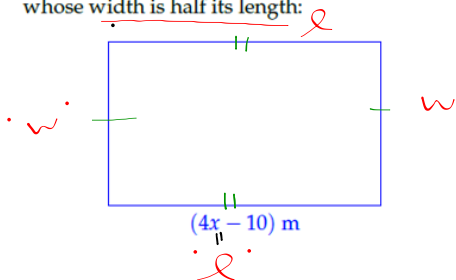
$$P = 2s + b$$

$$P = 2(5y - 3) + (10y + 8)$$

$$P = 10y - 6 + 10y + 8$$

$$P = 20y + 2$$

(3) Determine the simplified algebraic expression for the perimeter of the following rectangle whose width is half its length:



$$P = l + l + w + w$$

2 unk
• not • kay

• write the 2nd unknown is terms of 1st. How?

$$P = 2l + 2w$$

Translate the sentence into math symbols

"is" → =

half → $\frac{1}{2}x$

"half of" →

width is half its length

① $w = \frac{1}{2} \times l$ (sentence)

(diagram)

② $l = 4x - 10$

Questions wants perimeter in terms of x , so sub ① into ②

$$w = \frac{1}{2} \times (4x - 10)$$

$$w = 2x - 5$$

$$l = 4x - 10$$

$$P = 2l + 2w$$

$$P = 2(4x - 10) + 2(2x - 5)$$

$$P = 8x - 20 + 4x - 10$$

$$P = 12x - 30$$

You do:

Q 4 - 6

and check answers

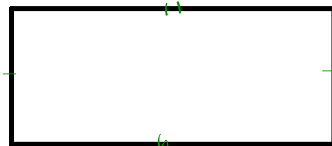
(4) Determine the simplified algebraic expression for the perimeter of an isosceles triangle with a base measuring $(2x^2 - 8x) m$ and one congruent side measuring $(3x + 4)m$

(5) Determine the perimeter of a rhombus with a side measuring $(3x^2 - 4x + 10) cm$.

(6) Determine the perimeter of a rectangle whose width is a quarter its length which measures $(x^4 - 12) cm$.

$$w = \frac{1}{4} \cdot l$$

$$w = \frac{1}{4} \cdot (x^4 - 12)$$



$$l = (x^4 - 12)$$

$$w = \frac{1}{4} x^4 - 3$$

$$w = 0.25x^4 - 3$$

$$P = 2l + 2w$$

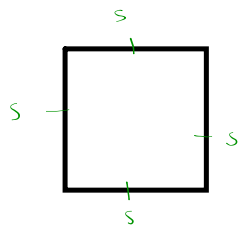
$$P = 2(x^4 - 12) + 2(0.25x^4 - 3)$$

$$P = \underline{2x^4} - \underline{24} + \underline{0.5x^4} - \underline{6}$$

$$P = (2.5x^4 - 30) cm$$

Solving for missing measurement?

(1) If the perimeter of a square is $(24x - 12)$ dam, then what is the measure of one of its sides? what's 's' in terms of x.



WANT: s

TOOL: 1 eq
 $P = 4s$

INFO

$P = 24x - 12$

have info

- sub
- simplify
- solve (for s NOT x)

$P = 4s$

$$24x - 12 = 4s$$

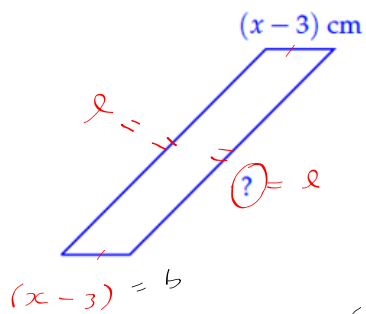
$$\frac{24x - 12}{4} = \frac{4s}{4}$$

$$\frac{24x}{4} - \frac{12}{4} = s$$

$$s = 6x - 3$$

∴ s is $(6x - 3)$ dam

(2) Determine the measure of the missing side if the perimeter of the following parallelogram is $(6x + 8)$ cm:



INFO

$$P = l + l + b + b$$

$$P = 2l + 2b$$

$$P = 6x + 8$$

$$b = x - 3$$

question
Diagram

$$6x + 8 = 2l + 2(x - 3)$$

. sub
. simplify
. solve for l!
w o.o.

$$6x + 8 = 2l + 2x - 6$$

$$-2x + 6 \quad -2x + 6$$

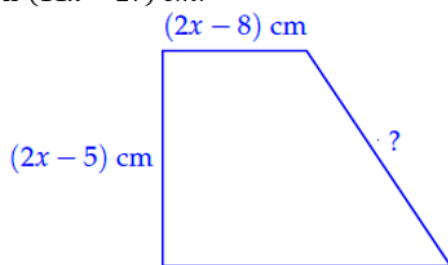
$$\frac{4x + 14}{2} = \frac{2l}{2}$$

$$l = 2x + 7$$

- 4 B
- 3 E
- 2 { D
- 1 { M
- 0 { 4
- 5

You do #3 - 6

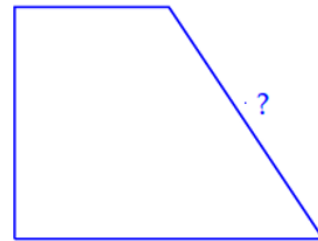
(3) The large base of the following trapezoid is twice the measure of the small base. Determine the measure of the missing side if the perimeter is $(11x - 27)$ cm:



(4) If the perimeter of an equilateral triangle is $(4x - 21) m$, then what is the measure of one of its sides?

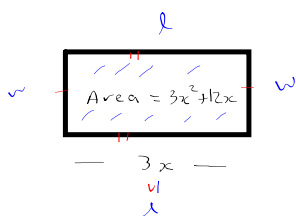
(5) Determine the missing measure of the length of a rectangle if its perimeter measures $(12x - 10) cm$ and if one of its widths measures $(2x + 1) cm$.

(6) The small base of the following trapezoid is half the measure of the large base which measures $(4x - 12) m$. Determine the measure of the missing side if the perimeter measures $(24x + 10) m$ and if its height measures $(x - 1) m$:



Solving w Area Tool

(1) If the area of a ^{rectangle} square is $(3x^2 + 12x)$ dam², and its length is $(3x)$ dam, what is the width of the rectangle?



$$A = l \cdot w$$

$$\frac{3x^2 + 12x}{3x} = \frac{3x \cdot w}{3x}$$

$$w = \frac{3x^2}{3x} + \frac{12x}{3x}$$

$$w = x + 4$$

$\therefore w$ is $(x + 4)$ dam

WANT: w

TOOL: 1 eq.

$$A = l \cdot w$$

INFO:

$$A = 3x^2 + 12x$$

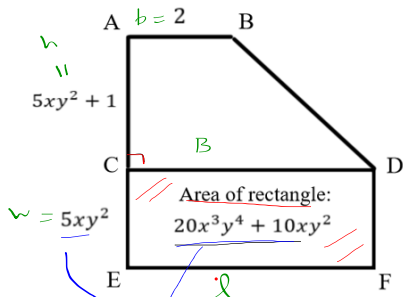
$$l = 3x$$

.sub
-simplify
-solve
w in terms of

x
w
+ \leftrightarrow
 $\sqrt{3x}$ \leftrightarrow $2x^2$

Practice: Solving and Simplifying with Algebraic Expressions

Example 1: The polygon below is formed by a right trapezoid on top of a rectangle. The algebraic expression of the rectangle's area is in square millimeters. What is the simplified algebraic expression of the area of polygon ABCDEF in mm^2



$A = l \cdot w$

$$\frac{20x^3y^4 + 10xy^2}{5xy^2} = \frac{l \cdot (5xy^2)}{5xy^2}$$

$$l = \frac{20x^3y^4}{5xy^2} + \frac{10xy^2}{5xy^2}$$

$$l = 4x^2y^2 + 2 = B$$

$$A_T = A_{trapezoid} + A_{rectangle}$$

$$A_T = \frac{(b+B) \times h}{2} + A_{rect}$$

$$A_{rect} = 20x^3y^4 + 10xy^2$$

$$b = 2$$

$$B = 4x^2y^2 + 2$$

$$h = 5xy^2 + 1$$

$$A_T = \frac{(2 + 4x^2y^2 + 2) \times (5xy^2 + 1)}{2} + 20x^3y^4 + 10xy^2$$

$$A_T = \frac{(4x^2y^2 + 4) \times (5xy^2 + 1)}{2} + 20x^3y^4 + 10xy^2$$

$$A_T = \frac{(20x^3y^4 + 4x^2y^2 + 20xy^2 + 4)}{2} + 20x^3y^4 + 10xy^2$$

$$A_T = 10x^3y^4 + 2x^2y^2 + 10xy^2 + 2 + 20x^3y^4 + 10xy^2$$

$$A_T = 30x^3y^4 + 2x^2y^2 + 20xy^2 + 2$$

WANT: A_{total}

TOOL: $A_{total} = A_{trapezoid} + A_{rect}$

$$A_{trapezoid} = \frac{(b+B) \times h}{2}$$

$$A_{rect} = l \cdot w$$

INFO:

$$b = 2$$

$$B = ?$$

$$h = 5xy^2 + 1$$

B is congruent to l

$$B = l$$

WANT: B or l

TOOL: $A = l \cdot w$

INFO: $A = 20x^3y^4 + 10xy^2$

$$w = 5xy^2$$

$$w = 5xy^2$$

$$l = ?$$

$$h = 5xy^2 + 1$$

$$B = l$$

pick the eq for given info.

have all info.

solve for l .

sub simplify (solve done)

8
E
N
S
A
S

You do solving question and exit ticket for homework

$$A_T = \frac{(b+B)}{2} \cdot \frac{h}{1}$$

$$A_T = \frac{(b+B) \cdot h}{2}$$