

9/8/14 pg

IA:1 Expressions & Equations Packet

Natural : what you naturally start counting with (+ up) 1, 2, 3, 4...

Whole : start with "hole" # (+ up) 0, 1, 2, 3, 4...

Integer : pos / neg whole #'s.
"I want an Integer" -3, -2, -1, 0, ..., 16, 17...

<u>Irrational</u>	$\sqrt{2}$	1.41421...	Decimals
	$\sqrt{5}$	2.23606...	go on 4e
	$\sqrt{10}$		in no
	$\sqrt{100}$		<u>pattern</u>

↓

π , e

"Transcendentals"

Rational = FRACTION

* can be written as one #

$$\frac{2}{5}$$

$$.6$$

$$\frac{6}{10} = \left[\frac{3}{5} \right]$$

* decimals

$$\frac{4}{3}$$

$$-2.5$$

terminate or have pattern

$$6$$

$$\downarrow -2 \frac{1}{2} \rightarrow \left[\frac{-5}{2} \right]$$

Time out... IS $\bar{9} = 1$?

$$\frac{1}{3} + \frac{1}{3} + \frac{1}{3} = 1$$

↓ ↓ ↓ ↓?! Whoa!

$$.\bar{3} + .\bar{3} + .\bar{3} = .\bar{9}$$

Remember PEMDAS!

*

$$5 - 3(2) = 5 - 6 = \boxed{-1}$$

$$5 - 3(2)^2 = 5 - 3(4) \\ = 5 - 12 = \boxed{-7}$$

Expressions

$$a) (3x-2)(x+9) \quad 3x^2 + 27x - 2x - 18$$

$$\boxed{3x^2 + 25x - 18}$$

$$b) (2x-5)^2 \rightarrow (2x-5)(2x-5)$$

"Expand"

$$\begin{array}{l} \cancel{(2-5)^2} = (-3)^2 = 9 \\ \downarrow \end{array}$$

$$\cancel{4-25 = -21}$$

$$\cancel{4+25 = 29}$$

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

$$\boxed{4x^2 - 20x + 25}$$

$$c. (8x^2-1)(5x^3-2x+7) \quad \begin{array}{l} 40x^5 - 16x^3 + 56x^2 \\ -5x^3 \quad + 2x - 7 \end{array}$$

Line up like terms

vertically

$$\boxed{40x^5 - 21x^3 + 56x^2 + 2x - 7}$$

$$d) 7(5-2x) - 5 + 3(1-x)$$

$$-17x + 33$$

$$e) x(x-3)(x+5) \rightarrow x(x^2 + 2x - 15)$$

$$\boxed{x^3 + 2x^2 - 15x}$$

$$a) (2x^2 - 3x + 5) - (7x^2 + 8x - 11)$$

you can: $-7x^2 - 8x + 11$

$$\boxed{-5x^2 - 11x + 16}$$

Evaluate:

$$a) \boxed{-125} \quad b) \boxed{25} \quad c) (1-3)^2 + 3^0$$

$$4 + 1 = \boxed{5}$$

$$d) -2(8+3)^2$$

$$-2(8)^2$$

$$-2 \cdot 64 = \boxed{-128}$$

$$e) 2\sqrt{3} \cdot 4\sqrt{3}$$

$$8 \cdot 3 = \boxed{24}$$

$$f) 5 - 2(4)$$

$$5 - 8 = \boxed{-3}$$

Fractions

x goes w/ numerator!

$$e) 7\left(\frac{5x}{6}\right) \div \frac{10}{6}x$$

$$\frac{35x}{6} \div \frac{10x}{6} = \frac{35x}{6} \cdot \frac{6}{10x} = \boxed{\frac{7}{2}}$$

Equations

$$a) \frac{15(x+4)}{15} = \frac{30}{15}$$

$$x+4 = 2$$

$$\boxed{x = -2}$$

$$b) \frac{3(x+4)}{3} + \frac{9}{3} = \frac{6(x+8)}{3}$$

$$x+4+3 = 2(x+8)$$

$$\begin{array}{r} x+7 = 2x+16 \\ -x \quad \quad -x \end{array}$$

$$\begin{array}{r} 7 = x+16 \\ -16 \quad \quad -16 \end{array}$$

$$\boxed{x = -9}$$

$$c) -5x-4 = -20$$

$$5x+4 = 20$$

Sweep the winds of
change through
each term

$$d) -3x^2+5 = -70$$

$$\begin{array}{r} \downarrow \quad \quad \downarrow \quad \quad \downarrow \\ 3x^2 - 5 = 70 \\ +5 \quad \quad +5 \end{array}$$

$$\frac{3x^2}{3} = \frac{75}{3}$$

$$\sqrt{x^2} = \sqrt{25}$$

$$\boxed{x = \pm 5}$$

$$e) 2(x-5) = 16 - 2(13 - 2x)$$

$$2x - 10 = 16 - 26 + 4x$$

$$2x - 10 = -10 + 4x$$

$$2x = 4x$$

$$2x = 0$$

$$\boxed{x = 0}$$

exact same term
on both
sides?

bye!

$$f) a - 6 = -6 - (3a - 7) - 2a$$

$$a = -(3a - 7) - 2a$$

$$a = -3a + 7 - 2a$$

$$a = -5a + 7$$

$$\frac{6a}{6} = \frac{7}{6}$$

$$\boxed{a = \frac{7}{6}}$$

$$g) \frac{x-3}{2} = \frac{28}{8}$$

$$8x - 24 = 56$$

$$8x = 80$$

$$\boxed{x = 10}$$

$$h) \sqrt{x+9} = 3$$

MUST
be 9.

$$x+5 = 9$$

$$\boxed{x = 4}$$