Warm Up:

1 The solution to $4p + 2 < 2(p + 5)$ is

(1) $p > -6$ (3) $p > 4$

(2) $p < -6$ (4) $p < 4$

$4p + 2 < 2p + 10$
$-2p \quad\quad -2p$
$2p + 2 < 10$
$-2 \quad\quad -2$
$\frac{2p}{2} < \frac{8}{2}$
$p < 4$

2 If the difference $(3x^2 - 2x + 5) - (x^2 + 3x - 2)$ is multiplied by $\frac{1}{2}x^2$, what is the result, written in standard form?

$\boxed{3x^2} - 2x + 5 \boxed{-x^2} - 3x + 2$

$\frac{1}{2}x^2(2x^2 - 5x^1 + 7)$

$\boxed{x^4 - \frac{5}{2}x^3 + \frac{7}{2}x^2}$

3 If $k(x) = \boxed{2x^2 - 3\sqrt{x}}$, then $k(9)$ is

(1) 315 (3) 159

(2) 307 (4) 153

$k(9) = 2(9)^2 - 3\sqrt{(9)}$

4 Students were asked to write a formula for the length of a rectangle by using the formula for its perimeter, $\boxed{p = 2\ell + 2w}$. Three of their responses are shown below.

*Solve for p!

I. $\ell = \frac{1}{2}p - w$ ✓

II. $\ell = \frac{1}{2}(p - 2w)$ ✓

III. $\ell = \frac{p - 2w}{2}$ ✓

Which responses are correct?

(1) I and II, only (3) I and III, only

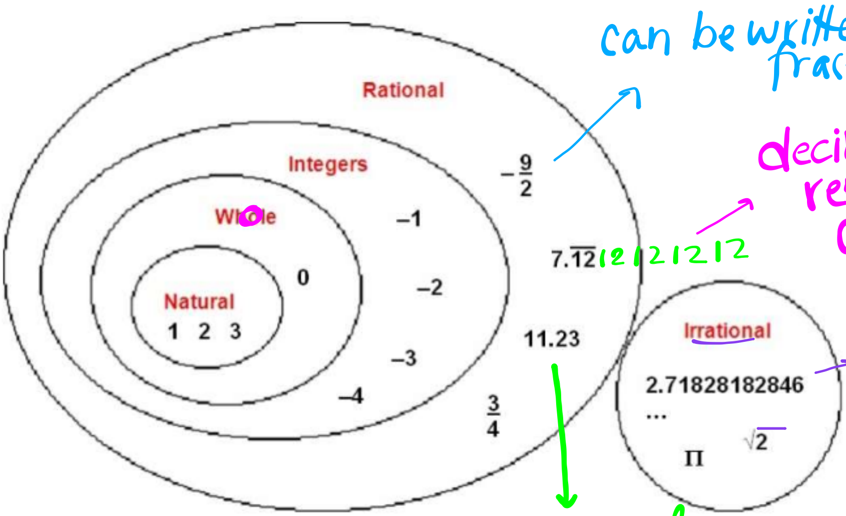
(2) II and III, only (4) I, II, and III

I. $\ell = \frac{1}{2}p - w$
$+w \quad\quad +w$
$2(\ell + w) = (\frac{1}{2}p)2$
$2\ell + 2w = p$

II. $2(\ell) = (\frac{1}{2}(p - 2w))2$
$2\ell = p - 2w$
$+2w \quad\quad +2w$
$2\ell + 2w = p$

III. $2(\ell) = (\frac{p - 2w}{2})2$
$2\ell = p - 2w$
$+2w \quad\quad +2w$
$2\ell + 2w = p$

Classifying Numbers:



can be written as a fraction

decimal that repeats in a pattern

goes on forever w/ no pattern

decimal that ends

RATIONAL

- A **rational** number is a number that can be expressed as a fraction or ratio where the numerator and the denominator of the fraction are both integers.
- When the fraction is divided out, it becomes a **terminating** or **repeating decimal**.

IRRATIONAL

Math Frac

- An **irrational number** cannot be expressed as a fraction.
- Irrational numbers are **non-terminating, non-repeating decimals**.

BEWARE

Some rational fractions may produce a large number of digits in their repeating patterns, which may **exceed** the size of the screen on the calculator. The fraction $\frac{53}{83}$ has a calculator display of 0.6385542169, which shows no repeating pattern, when in reality the pattern will repeat after 41 digits!

When any of the four basic operations (+,–, •, ÷) are performed on *non-zero* real numbers:

a) if both terms are **rational,** the result is *always* rational;

$9 \cdot 4 = 36$ (R)

$\sqrt{4} \cdot \sqrt{16} = 8$ (R)

$(1.5)(2.236) = 3.354$ (R)

b) if one of the terms is **rational** and the other term is **irrational**, the result is *always* irrational (excluding zero as a term for multiplication or division);

$(2)(\sqrt{2}) = 2.828427125\ldots$ (I)

R I

$(1.25)(\sqrt{5}) = 2.795084972\ldots$ (I)

R I

c) if both terms are **irrational**, the result may be **rational** $(\sqrt{2})(\sqrt{8}) = \sqrt{16} = 4$ (R) or **irrational** $(\sqrt{2})(\sqrt{3}) = \sqrt{6} = 2.4494\ldots$ I

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