DAILY QUEST:

The football field has a length of $3x^2 + 5x + 9$ feet and has a width of $5x^2 - 2x + 4$ feet. What is the area of the football field represented as a polynomial?

	$5x^2$	$-2x$	4
$3x^2$	$15x^4$	$-6x^3$	$12x^2$
$5x$	$25x^3$	$-10x^2$	$20x$
9	$45x^2$	$48x$	36

$15x^4 + 19x^3 + 47x^2 + 2x + 36$

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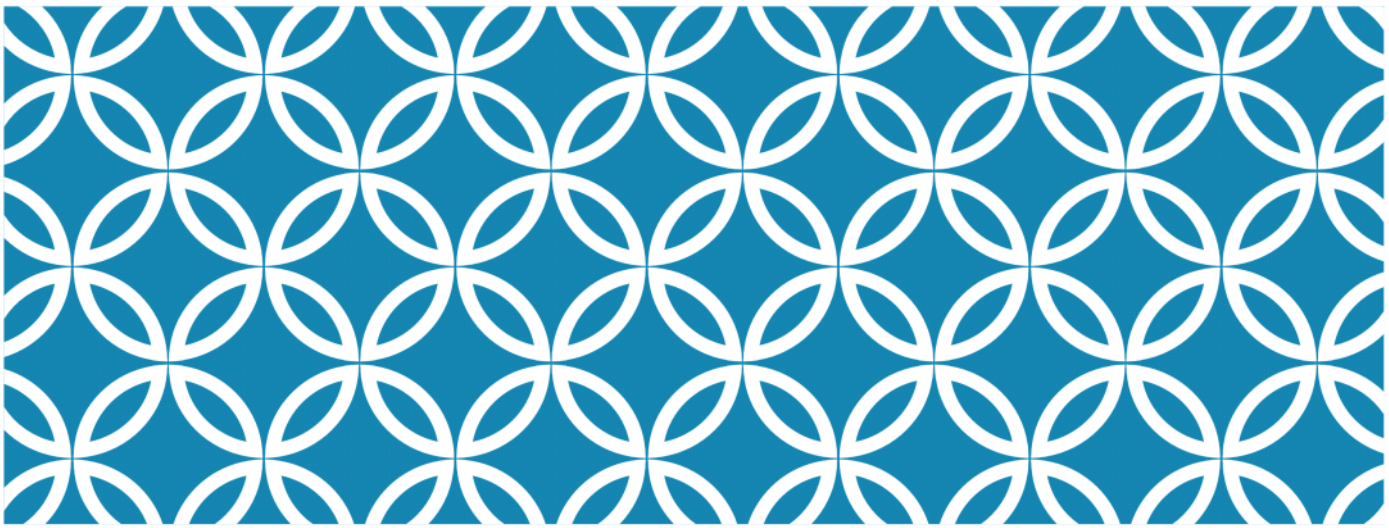

LESSON 1.2 AND 2.2 RATIONAL/IRRATIONAL NUMBERS COVERT UNITS

convert

Goal: To identify, evaluate and use operations with expressions/polynomials.

Obj: SWBAT classify rational and irrational numbers.

Obj: SWBAT to convert units of measure.

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VOCAB.

Rational Numbers

- Whole numbers
- Fractions/Values with decimals that terminate or repeat.
  - Example: $\frac{8}{9} = 0.888888888\overline{8}$

Irrationals Numbers

- Values with decimals that are nonterminating or non-repeating.
  - Example: $\pi \approx 3.141592654 \ldots$

    $e \approx 2.71828182845 \ldots$

PROBLEM 1:

rational Irrational

Classify as rational or irrational

1. $\frac{2}{3}$ = .666̄ rational
2. -19 rational
3. $\sqrt{5}$ 2.236... irrational
4. $\frac{\pi}{2}$ 1.5707... irrational
5. $\sqrt{16}$ 4 rational
6. $\frac{1}{8}$ .125 rational
7. 0 rational
8. $\frac{3}{5}$ .6 rational

rational Irrational

PROBLEM 2: Find the answer and determine if the answer is rational or irrational.

1. $-8 + 15 =$ 7
2. $2 + \frac{3}{5} =$ 2.6
3. $\frac{1}{4} + \frac{1}{3} =$ $.58\overline{3}$
4. $\frac{22}{7} + 1 =$ 4.142857....
5. $4 + \pi =$ 7.14159...
6. $\sqrt{2} + 2 =$ 3.41421

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rational Irrational

PROBLEM 2A: Find the answer and determine if the answer is rational or irrational.

7. $\frac{1}{2} \cdot \frac{3}{5} =$ .3

8. $\sqrt{9} \cdot 11 =$ 33

9. $\frac{5}{6} \cdot \frac{1}{3} =$ $.2777\overline{7}$

10. $2\pi =$ 6.2831...

11. $4\sqrt{5} =$ 8.944...

12. $\frac{10}{7} \cdot \frac{1}{5} =$ .285714...

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rational Irrational

PROBLEM 2B: Find the answer and determine if the answer is rational or irrational.

13. $\sqrt{3} \cdot \sqrt{3} =$ 3

14. $\sqrt{2} \cdot \sqrt{8} =$ 4

15. $\sqrt{6} \cdot \sqrt{5} =$ 5.4772...

RATIONAL AND IRRATIONALS OPERATION RULES

What happen when you had a rational plus a rational number?

1-3: you always get a rational answer.

What happen when you had a rational plus an irrational number?

4-6: you always get a irrational answer.

What happen when you had a rational times a rational number?

7-9: you always get a rational answer

What happen when you had a rational times an irrational number?

10-12: you always get a irrational answer

What happen when you had an irrational times an irrational number?

13-15: Sometime you get a rational and Sometimes you get a irrational answer.

RATIONAL AND IRRATIONALS OPERATION RULES

What happen when you had a rational plus a rational number?

- You always get a rational number.

What happen when you had a rational plus an irrational number?

- You always get an irrational number.

What happen when you had a rational times a rational number?

- You always get a rational number.

What happen when you had a rational times an irrational number?

- You always get an irrational number.

What happen when you had an irrational times an irrational number?

- You sometimes get an irrational and sometimes you a rational.

PROBLEM 3:

Billybob ran 50 feet. His teacher wants him to know how many meters he ran. Convert the 50 feet into meters. ($1\ meter \approx 3.28 feet$)

$$\frac{50\ ft}{1} \cdot \frac{1\ meter}{3.28\ ft} = \frac{50}{3.28}\ meters$$

15.24 meters

PROBLEM 3A:

60 min = 1 hr

Sandy-Sue slept for 20 hours. She wants to find out how many minutes she slept. Convert the 20 hours to minutes.

$$\frac{20\text{ hr}}{1} \cdot \frac{60\text{ min}}{1\text{ hr}} = \frac{1200\text{ minutes}}{1}$$

1200 minutes

EXAMPLE 4:

A cyclist travels 105 kilometers in 4.2 hours. Use dimensional analysis to convert the cyclist's speed to miles per minute. Use 1 mi = 1.61km.

$$\frac{105\ \text{km}}{4.2\ \text{hr}} \cdot \frac{1\ \text{mile}}{1.61\ \text{km}} \cdot \frac{1\ \text{hr}}{60\ \text{min}} = \frac{105\ \text{miles}}{405.72\ \text{minute}}$$

.2587 miles per minute

PROBLEM 4A:

1 miles = 5280 ft

A baseball pitcher throws the ball 101 mph. Use dimensional analysis to convert the speed of the ball to feet per second.

$$\frac{101 \text{ miles}}{1 \text{ hr}} \cdot \frac{5280 \text{ ft}}{1 \text{ mile}} \cdot \frac{1 \text{ hr}}{60 \text{ min}} \cdot \frac{1 \text{ min}}{60 \text{ sec}} = \frac{533280 \text{ ft}}{3600 \text{ sec}}$$

148.13 ft per second

PROBLEM 4B:

A box of books weighs 4.10 kilograms for every meter of its height. Convert this ratio into pounds per foot.

Use 1ft = 0.305 m; 1lb = 0.454 kg

PROBLEM 4C:

A go-kart travels 21 miles per hours. Convert this speed into feet per minute.

Use 1hr = 60 min; 1mi = 5280 ft