

S-A1 Algebra 1 Session 2 6/5

1.) 8 less than the sum of b and 9

\ominus switch order \oplus

$$b + 9 - 8 \quad \text{or} \quad (b + 9) - 8$$

2.) 12 more than the quotient of 8 and x

$$12 + 8 \div x \quad \text{or} \quad 12 + (8 \div x) \quad \text{or} \quad 12 + \frac{8}{x}$$

3.) The difference between c and the product of 8 and b

$$c - 8 * b \quad \text{or} \quad c - 8b$$

\uparrow coefficient

4.) 9 less than a number increased by 3

\ominus switch order

$$n + 3 - 9 \quad \text{or} \quad (n + 3) - 9$$

5.) The product of 8 and the sum of 14 and y.

$$8 * (14 + y) \quad \text{or} \quad 8(14 + y)$$

$$\begin{array}{l} |-8| - |7| = \\ 8 - 7 = 1 \end{array} \qquad \begin{array}{l} |(3 \downarrow -7)| + |-9| \\ \underbrace{\quad\quad\quad} \\ |-4| + 9 \\ 4 + 9 = \boxed{13} \end{array}$$

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

Rational

number that can be put into a fraction

Irrational

number that cannot be put into a fraction

Rational Numbers

Counting Numbers - 1, 2, 3, 4, 5, ...

Whole Numbers - 0, 1, 2, 3, 4, 5, ...

Integers - All whole numbers and their opposites \ominus
-5, -4, -3, -2, -1, 0, 1, 2, 3, 4, 5, ...

0.45 \square terminal decimal $\frac{45 \div 5}{100 \div 5} = \frac{9}{20}$ Rational

0. $\overline{4444}$ $\circ \dots$ = $\frac{4}{9}$ single repeating decimal

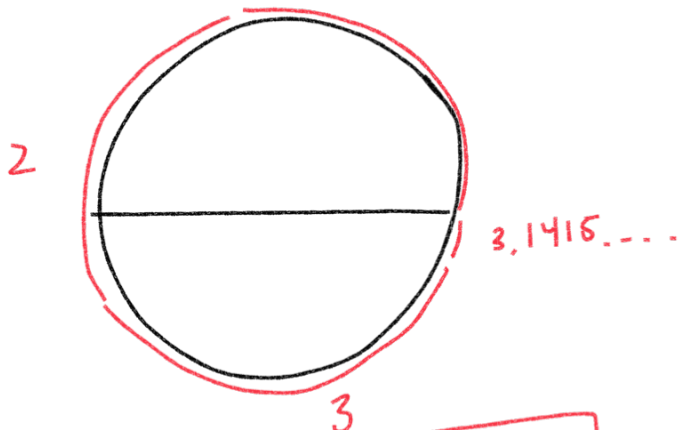
0.777... = $\frac{7}{9}$ Rational

0. $\overline{234}$ $\overline{234}$ $\overline{234}$... = $\frac{234}{999}$ Group repeating decimal - Rational

0.12 $\overline{4444}$... Rational - repeating decimal

0.123456... Irrational - no repeat

$\pi = \text{pi}$ 3.141592... no repeat \rightarrow irrational



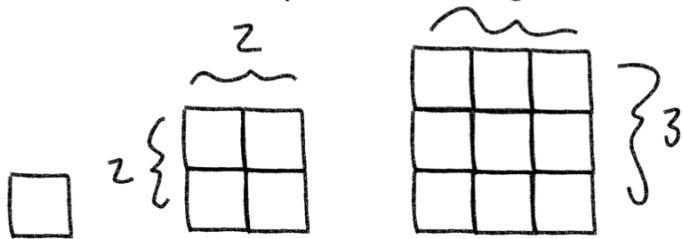
π is the number of times the diameter of a circle can wrap around its circumference

$$C = \pi d \quad | \quad \pi = \frac{C}{d}$$

Rational \rightarrow can be put into a fraction.

Rational Numbers

Perfect Squares $\sqrt{36} = \pm 6$



1 4 9

$$\sqrt{4} = 2 \quad \sqrt{9} = 3$$

$\sqrt{40}$ not a perfect square
irrational

- consecutive odd numbers
- 1 $\sqrt{0} = 0$
 - 1 $\sqrt{1} = 1$
 - 3 $\sqrt{4} = 2$
 - 5 $\sqrt{9} = 3$
 - 7 $\sqrt{16} = 4$
 - 9 $\sqrt{25} = 5$
 - 11 $\sqrt{36} = 6$
 - 13 $\sqrt{49} = 7$
 - 15 $\sqrt{64} = 8$

1.) 4 Rational
counting, whole, integer

2.) -7 Rational
integer

3.) 0.8888... Rational
repeating

4.) 0.143143 Rational
terminal

5.) 0.347348...
irrational

6.) 0.428428...
rational
repeating

7.) $\sqrt{81}$
rational
perfect square

8.) $\sqrt{200}$
irrational

Order of Operations

PEMDAS

$$3 + 4 * 5$$

parenthesis P

exponents E

mult/div MD

add/sub AS

$$\begin{array}{r} 3 + 4 * 5 \\ \checkmark \\ 7 * 5 \\ 35 \end{array}$$

or

$$\begin{array}{r} 3 + 4 * 5 \\ \checkmark \\ 3 + 20 \\ (23) \end{array}$$

$$3 + 4 * 5$$

$$3 + (5 + 5 + 5 + 5) = (23)$$

P
E
MD
AS

$$3 * 5^2$$

$$3 * 5^2$$

$$\begin{array}{r} (3 * 5)^2 \\ 15^2 \\ 225 \end{array}$$

$$\begin{array}{r} 3 * 25 \\ (75) \end{array}$$

$$\begin{array}{r} 3 * 5 * 5 \\ \checkmark \\ 15 * 5 = (75) \end{array}$$

$$3 * 5 * 5$$

$$(5 + 5 + 5) * 5$$

$$(5 + 5 + 5) + (5 + 5 + 5) + (5 + 5 + 5) + (5 + 5 + 5) + (5 + 5 + 5)$$

P

$M \leftrightarrow D$

Division is ant-mult.

E

$$\frac{1}{2} \div \frac{3}{4}$$

Keep, change, flip!

$MD \leftrightarrow$

↓ ↓

$AS \leftrightarrow$

$$\frac{1}{2} * \frac{4}{3}$$

P ✓

$A \leftrightarrow S$

Sub is opposite of addition

E

$$7 - 5 = 7 + (-5)$$

MD

AS

$$4 + 3(15 - 2^3)$$

$$4 + 3(15 - 8)$$

$$[4 + 3(7)]$$

$$4 + 21 = 25$$

$$2.) \quad 5 + 16 \div 2 + 7 * 4$$

$$\downarrow$$
$$5 + 8 + 7 * 4$$

$$\checkmark$$
$$5 + 8 + 28 = \boxed{41}$$

P P
E E
→ DM ← MD
SA ↔ AS

$$3.) \quad 8 + 4^2 * 12 - 2^3 \div 8$$

$$\downarrow \qquad \qquad \downarrow$$
$$8 + 16 * 12 - 8 \div 8$$

$$\checkmark$$
$$\rightarrow 8 + 192 - 8 \div 8$$

$$\checkmark$$
$$8 + 192 - 1$$
$$200 - 1 = \boxed{199}$$