

BE-Alg. 2

Wednesday 8-31-11

From memory - NO Neighbors - NO NOTES:

- ① Formula for Area of a circle.
- ② Formula for circumference of a circle.

Mental Math:

③ $18\left(\frac{4}{9}\right)$ ④ $\frac{6}{\frac{2}{5}}$ ⑤ $-\frac{2}{3}\left(-\frac{5}{8}\right)$

⑥ $\frac{1}{5} + \frac{1}{7}$ ⑦ $\frac{1}{x} + \frac{1}{y}$

$\frac{7}{35} + \frac{5}{35} = \boxed{\frac{12}{35}}$

$\frac{y}{xy} + \frac{x}{xy} = \boxed{\frac{y+x}{xy}}$

$\frac{7}{7.5} + \frac{5}{7.5}$

compare

ACT
KMT
6/09

- ① WHAT IS THE SURFACE AREA, IN SQUARE INCHES, OF AN 8-inch cube?

MULTIPLE
CHOICE

- ② Jerome, Kevin, and Seth shared a submarine sandwich. Jerome ate $\frac{1}{2}$ of the sandwich, Kevin ate $\frac{1}{3}$ of the sandwich, and Seth ate the rest. What is the ratio of Jerome's share, to Kevin's share, to Seth's share?
- Ⓐ 2:3:6
Ⓑ 2:6:3
Ⓒ 3:1:2
Ⓓ 3:2:1
Ⓔ 6:3:2

① $A_{\odot} = \pi r^2$

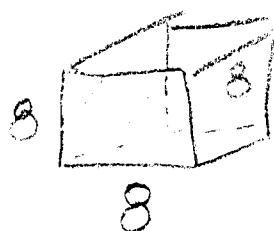
② $C_{\odot} = 2\pi r$

③ $48^{\frac{2}{3}}\left(\frac{4}{9}\right) = 18$

④ $\frac{6}{\frac{2}{5}} = \frac{3}{1} \cdot \frac{5}{2} = 15$

⑤ $-\frac{2}{3}\left(-\frac{5}{\frac{8}{4}}\right) = +\frac{5}{12}$

ACT ①



Area of each side = $8 \cdot 8 = 64$
times 6 sides $\times 6$

384 in^2

② $\frac{1}{2} : \frac{1}{3} : ?$
 $\frac{3}{6} + \frac{2}{6} \Rightarrow \frac{5}{6} \therefore \frac{1}{6}$

$\frac{1}{2} : \frac{1}{3} : \frac{1}{6}$

Times 6 to change
to whole numbers

$3 : 2 : 1$

$6 \cdot \frac{1}{2} = 3$

$6 \cdot \frac{1}{3} = 2$

$6 \cdot \frac{1}{6} = 1$

MENTAL MATH

Compound $\Rightarrow$ MORE THAN ONE

Compound Inequality $\Rightarrow$ MORE THAN ONE
inequality $\Rightarrow$ 2 for now.

2 Kinds

AND'S

"INTERSECTIONS"
"CONJUNCTIONS"

CAN WRITE "LONG" WAY
AND A "SHORT" WAY

OR'S

"UNIONS"
"DISJUNCTIONS"

CAN ONLY WRITE
the "LONG" WAY

(EX) $x \geq 1$ AND $x < 2$

SHORT WAY USING $<$
 $\Rightarrow$ WRITE SMALLEST NUMBER 1st

$$1 \leq x < 2$$

SHORTWAY USING $>$, largest 1st

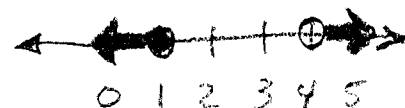
$$2 > x \geq 1$$



TYPICAL "AND"

"SOLUTION" x SATISFIES BOTH
INEQUALITIES

$$x \leq 1 \text{ OR } x > 4$$

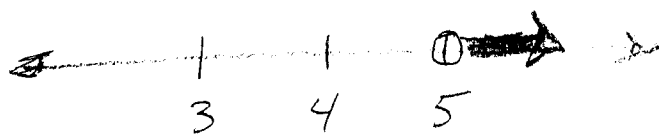


"SOLUTION" x SATISFIES
EITHER ONE OF THE
INEQUALITIES

WATCH OUT FOR "FAKE" COMPOUND INEQUALITIES.

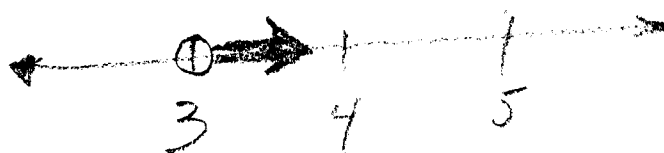
Instead of $\overset{\text{AND}}{\bullet \text{---} \bullet}$, $\overset{\text{OR}}{\leftarrow \bullet \text{---} \bullet \rightarrow}$ THEY WILL ONLY go in ONE direction. They ARE NOT really compound inequalities.

(EX) $X > 3$ AND $X > 5$



Really, $X > 5$ is the same

(EX) $X > 3$ OR $X > 5$



Really, $X > 3$ is the same.

EX2
Pg 41

Solve $y - 2 > -3$ or $y + 4 \leq -3$

SET UP 2 GRI'S

$$\begin{array}{r} y - 2 > -3 \\ +2 \quad +2 \end{array}$$

$$\begin{array}{r} y + 4 \leq -3 \\ -4 \quad -4 \end{array}$$

$$\boxed{y > -1} \quad \boxed{\text{OR}} \quad \boxed{y \leq -7}$$

MUST HAVE OR

CIRCLE THE END POINTS, DECIDE IF $\bullet$ or $\circ$



EX1
Pg 40

Solve $13 < 2x + 7 \leq 17$

$$\begin{array}{r} 13 < 2x + 7 \\ -7 \quad -7 \end{array}$$

$$6 < 2x$$

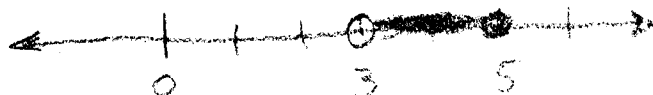
$$3 < x$$

$$\boxed{x > 3} \quad \boxed{\text{AND}}$$

$$\begin{array}{r} 2x + 7 \leq 17 \\ -7 \quad -7 \end{array}$$

$$2x \leq 10$$

$$\boxed{x \leq 5}$$



Alternate
(NOT RECOMMENDED)

$$\begin{array}{r} 13 < 2x + 7 \leq 17 \\ -7 \quad -7 \quad -7 \end{array}$$

$$\frac{6}{2} < \frac{2x}{2} \leq \frac{10}{2}$$

$$\boxed{3 < x \leq 5}$$

OTHER WAY
TO WRITE:

$$\{x | 3 < x \leq 5\}$$

$$(3, 5]$$

Absolute Value $\Rightarrow$ distance from 0 on a number line.

Symbol $|x|$ $\rightarrow$ "the absolute value of x" ≥ 0

Steps to solve an absolute value equation or inequality $\Rightarrow$ ① GET THE $|x|$ term "by itself"

② Split into + and -

③ Solve + and - using GRE/GRI

EX ③ $|x| = 5$

$$\begin{array}{l} \swarrow \oplus \quad \searrow \ominus \\ (x) = 5 \quad \left\{ \quad -(x) = 5 \right. \\ \boxed{x = 5} \quad \left\{ \quad \boxed{x = -5} \right. \end{array}$$

CK $|5| \stackrel{?}{=} 5 \checkmark$
 $|(-5)| \stackrel{?}{=} 5 \checkmark$

EX 4
pg 29

$|x+6| = 3x-2$

$$\begin{array}{l} \swarrow \oplus \quad \searrow \ominus \\ (x+6) = 3x-2 \quad \left\{ \quad -(x+6) = 3x-2 \right. \\ \begin{array}{l} x+6 = 3x-2 \\ -x+2 \quad -x+2 \end{array} \quad \left\{ \quad \begin{array}{l} -x-6 = 3x-2 \\ +x+2 \quad +x+2 \end{array} \right. \\ \begin{array}{l} 8 = 2x \\ \boxed{x = 4} \end{array} \quad \left\{ \quad \begin{array}{l} -4 = 4x \\ -1 = x \\ \boxed{x = -1} \end{array} \right. \end{array}$$

CK $x=4 \quad |(4)+6| \stackrel{?}{=} 3(4)-2 \checkmark$

CK $x=-1 \quad |(-1)+6| \stackrel{?}{=} 3(-1)-2$

$|5| \stackrel{?}{=} -3-2 \checkmark$

Ch. 1-4 Solving Absolute Value Equations

Ch 1-6 Solving Compound Inequalities (which includes Absolute Value Inequalities)

SIMILAR TO
EX 5 PG 42

EX

$$|3x - 12| - 4 \geq 2$$

+4 +4

Get $|?|$ by itself

$$|3x - 12| \geq 6$$

⊕ ↙ ⊖ ↘

Use $| |$ AS MEMORY

⊕ ⊖

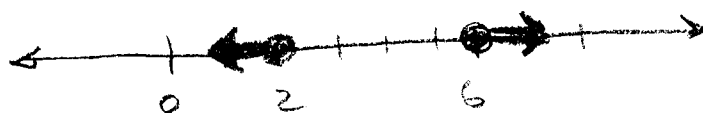
AID TO MAKE 2 SOLUTIONS,

A ⊕ AND A ⊖

$$\begin{array}{l} (3x - 12) \geq 6 \\ 3x - 12 \geq 6 \\ +12 \quad +12 \end{array} \quad \left\{ \begin{array}{l} -(3x - 12) \geq 6 \\ -3x + 12 \geq 6 \\ -12 \quad -12 \end{array} \right.$$

$$\frac{3x}{3} \geq \frac{18}{3} \qquad \frac{-3x}{-3} \geq \frac{-6}{-3}$$

$$\boxed{x \geq 6} \quad \boxed{?} \quad \boxed{x \leq 2}$$



$$\boxed{x \geq 6 \text{ OR } x \leq 2}$$

Graph, decide
if AND or OR

Must be "OR"

① Get $|?|$ By itself

② SPLIT INTO ⊕ ⊖

③ Solve 2 problems using GRE or GRI

CK BOTH SOLUTIONS!

• Homework: → Pg. 44 # 27, 28,