BE-Alg.2 MONDAY 8-30-10

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 $-\frac{2}{3}\left(-\frac{5}{8}\right)$

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

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

$\frac{7}{7\cdot5}+\frac{5}{7\cdot5}$

COMPARE

ACT KMJ 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?

(A) 2:3:6
(B) 2:6:3
(C) 3:1:2
(D) 3:2:1
(E) 6:3:2

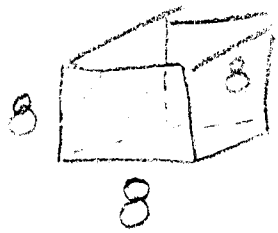
BE
ANSWERS

① $\boxed{A_{\odot} = \pi r^2}$ ② $\boxed{C_{\odot} = 2\pi r}$

③ $\overset{2}{\cancel{48}}\left(\frac{4}{\cancel{7}_{1}}\right) = \boxed{8}$ ④ $\frac{\frac{6}{}}{\frac{2}{5}} = \frac{\overset{3}{\cancel{6}}}{} \cdot \frac{5}{\frac{2}{1}} = \boxed{15}$

⑤ $-\frac{\overset{1}{\cancel{2}}}{3}\left(-\frac{5}{\cancel{8}_{4}}\right) = \boxed{+\frac{5}{12}}$

ACT ①



Area of each side = $8 \cdot 8 = 64$

times 6 sides $\times 6$

$\boxed{384\ in^2}$

② $\frac{1}{2} : \frac{1}{3} : ?$

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

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

Times 6 to change to whole numbers

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

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

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

MENTAL MATH

$\boxed{3 : 2 : 1}$

Compound ⇒ MORE THAN ONE

COMPOUND INEQUALITY ⇒ MORE THAN ONE INEQUALITY ⇒ 2 for NOW.

2 KINDS

AND is
"INTERSECTIONS"
"CONJUNCTIONS"

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

OR is
"UNIONS"
"disjunctions"

CAN ONLY WRITE the "LONG" WAY

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

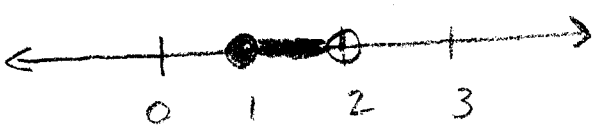
$X \leq 1$ or $X > 4$

SHORT WAY USING $<$
⇒ WRITE SMALLEST NUMBER 1st

$1 \leq X < 2$

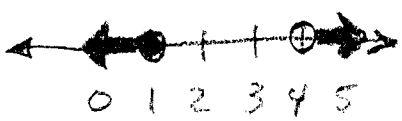
SHORT WAY USING $>$, largest 1st

$2 > X \geq 1$



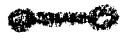
TYPICAL "AND"

"SOLUTION" X SATISFIES BOTH INEQUALITIES

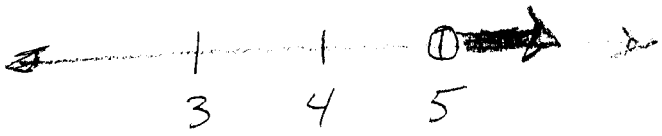


"SOLUTION" X SATISFIES EITHER ONE OR THE INEQUALITIES

WATCH OUT FOR "FAKE" COMPOUND INEQUALITIES.

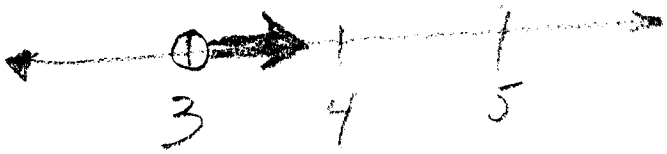
INSTEAD OF AND  OR  THEY WILL ONLY GO IN ONE DIRECTION. THEY ARE NOT REALLY COMPOUND INEQUALITIES.

(Ex) $x > 3$ and $x > 5$



Really, $x > 5$ IS THE SAME

(Ex) $x > 3$ OR $x > 5$



Really, $x > 3$ IS THE SAME.

EX 2 PG 41 Solve $y-2>-3$ or $y+4\leq -3$

SET UP 2 GRIDS

$y-2>-3$

$+2 \quad +2$

$y>-1$

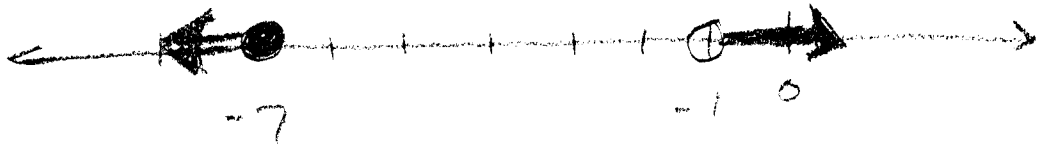
OR ← MUST HAVE OR

$y+4\leq -3$

$-4 \quad -4$

$y\leq -7$

CIRCLE THE END POINTS, DECIDE IF ● or ○



EX 1 PG 40 Solve $13<2x+7\leq 17$

$13<2x+7$

$-7 \quad -7$

$6<2x$

$3<x$

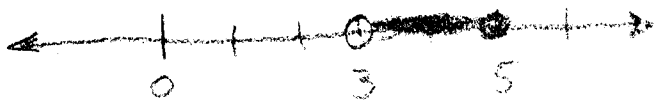
$x>3$ AND

$2x+7\leq 17$

$-7 \quad -7$

$2x \leq 10$

$x\leq 5$



ALTERNATE (NOT RECOMMENDED)

$13<2x+7\leq 17$

$-7 \quad -7 \quad -7$

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

$3<x\leq 5$

OTHER WAYS TO WRITE:

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

$(3,5]$

Absolute Value ⇒ distance from 0 on a number line.
distance is always positive (≥ 0)

Symbol $|x|$ → "the absolute value of x"

Steps to solve an absolute value equation or inequality ⇒
1. Get the $|?|$ term "by itself"
2. Split into + and −
3. Solve + and − using GRE/GR1

(Ex) $|x| = 5$

(+) $(x) = 5$ → $x = 5$

(−) $-(x) = 5$ → $x = -5$

CK $|5| \stackrel{?}{=} 5$ ✓

$|-5| \stackrel{?}{=} 5$ ✓

(Ex 4 pg 29) $|x+6| = 3x-2$

(+) $(x+6) = 3x-2$

$x+6 = 3x-2$

$-x+2 \quad -x+2$

$8 = 2x$

$x = 4$

(−) $-(x+6) = 3x-2$

$-x-6 = 3x-2$

$+x+2 \quad +x+2$

$-4 = 4x$

$-1 = x$

$x = -1$

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

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

$|5| \stackrel{?}{=} -3-2$ ✓

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

Similar to Ex 5 Pg 42

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

Get $|?|$ by itself

$+4 \quad +4$

$|3x-12| \geq 6$

Use $|\ |$ as memory aid

$\oplus$ $\ominus$

Aid to make 2 solutions, a $\oplus$ and a $\ominus$

$(3x-12) \geq 6$ { $-(3x-12) \geq 6$

$3x-12 \geq 6$ { $-3x+12 \geq 6$

Follow GRI

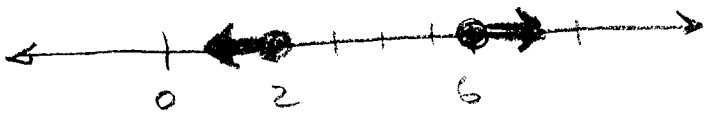
$+12 \quad +12$ { $-12 \quad -12$

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

$x \geq 6$ [?] $x \leq 2$

Graph, decide if And or OR

Must be "OR"



$x \geq 6$ OR $x \leq 2$

① Get $|?|$ By itself

② Split into $\oplus$ $\ominus$

③ Solve 2 problems using GRE or GRI

Ck both solutions!

• Homework: → Pg. 44 #27, 28,