

BE-Alg. 2 TUESDAY 9-1-09

MENTAL MATH:

①  $25 \left( \frac{3}{5} \right)$     ②  $\frac{9}{3} \left( \frac{7}{3} \right)$     ③  $\frac{5}{7} (7)$

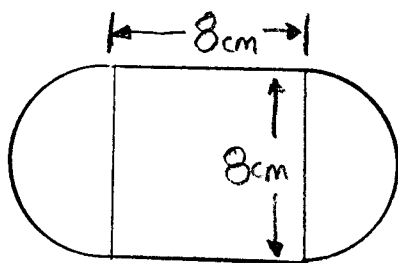
④  $-6 - (5)$     ⑤  $-6(-5)$     ⑥  $-6 - (-5)$

⑦ SOLVE AND graph THE SOLUTION ON A  
NUMBER LINE: ①  $3 < d + 5 < 8$

②  $y - 3 > 1$  OR  $y + 2 < 1$

ACT  
KMS  
JUNE  
09

⑧ The figure below consists of a square  
and 2 semicircles, with dimensions as shown.  
What is the outside perimeter, in centimeters,  
of the figure?



Multiple Choice

- Ⓐ  $8 + 8\pi$   
Ⓑ  $16 + 8\pi$   
Ⓒ  $16 + 16\pi$   
Ⓓ  $32 + 8\pi$   
Ⓔ  $32 + 16\pi$

SEMI = half  
 $P_{\text{O}} = C = 2\pi r$   
 $= 2\pi(4) = 8\pi$

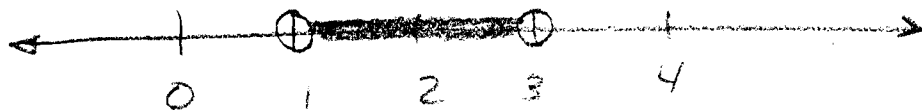
WATCH UNITS!

$P_{\square} \Rightarrow 8 + 8 = 16$  (ONLY 2 SIDES)

$\therefore P_{\text{TOTAL}} = 16 + 8\pi$

## 1.

$$\begin{array}{rcl} 9 < 3t + 6 & \boxed{\text{AND}} & 3t + 6 < 15 \\ -6 & \{ & -6 \\ \hline 3 < 3t & & 3t < 9 \\ \hline 3 & & 3 \end{array}$$



ALTERNATE "SHORT" WAY  $\Rightarrow$   $\boxed{1 < t < 3}$  \*PREFERRED  
or  $\boxed{3 > t > 1}$

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

Symbol  $|x|$

distance is always positive  $\geq 0$   
 $\rightarrow$  "the absolute value of x"

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  $|x| = 5$

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

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

EX 4  
pg 29

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

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

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

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

$|5| \stackrel{?}{=} -3-2 \times$   
 False  $\Rightarrow$  Not a solution!

Ch. 1-4 Solving Absolute Value Equations

NOTE: ABSOLUTE VALUE IS ALSO A "GROUPING SYMBOL"

EX  $|2x-4| < 6$

$\begin{array}{r} 2x-4 < 6 \\ +4 \quad +4 \end{array}$

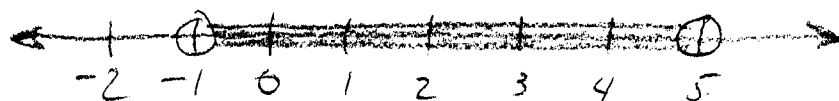
$\frac{2x}{2} < \frac{10}{2}$

$x < 5$

$\begin{array}{l} -(2x-4) < 6 \\ -2x+4 < 6 \end{array}$

$\frac{-2x}{-2} < \frac{2}{-2}$

$x > -1$



AND

Absolute Value Equation Alertness Check LOOK

$|x-5| = -2$

$\begin{array}{r} x-5 = -2 \\ +5 \quad +5 \end{array}$

$x = 3$

$\begin{array}{l} -(x-5) = -2 \\ -x+5 = -2 \end{array}$

$-x = -7 \therefore x = 7$

$\therefore x = \{3, 7\}$

CK  $|3-5| \stackrel{?}{=} -2$   
 $x=3$   
 $|-2| \stackrel{?}{=} -2$  FALSE

CK  $|7-5| \stackrel{?}{=} -2$   
 $x=7$   
 $|2| \stackrel{?}{=} -2$  FALSE

NO SOLUTION

• How could you tell this before you solved it?

Ans  $\rightarrow$  THE ABSOLUTE VALUE OF SOMETHING CAN NEVER BE NEGATIVE

# 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

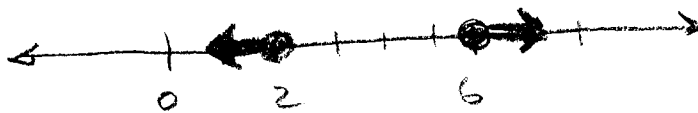
$$|3x-12| \geq 6$$

⊕ ↙      ⊖ ↘

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

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

$$x \geq 6 \quad ? \quad x \leq 2$$



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

Get |?| by itself

Use || AS memory

⊕ ⊖

AID TO MAKE 2 solutions,

A ⊕ AND A ⊖

Follow GRI

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: ① Page 31 # 33, 35, 37, 39

② Pg 44  
# 37, 38, 39