

Mental Math:

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

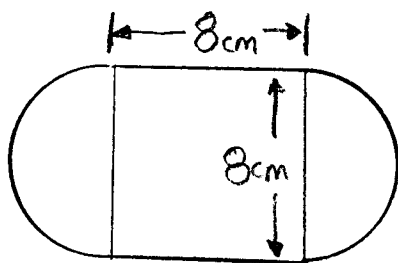
④ $-6-(5)$ ⑤ $-6(-5)$ ⑥ $-6-(-5)$

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
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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
 $P_{\circ} = C = 2\pi r$
 $= 2\pi(4) = 8\pi$

WATCH UNITS!

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

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

1

A horizontal number line with arrows at both ends. It has tick marks labeled 0, 1, 2, 3, and 4. The region between 1 and 3 is shaded with a dark, textured pattern. There are small circles at the 1 and 3 tick marks, indicating that the endpoints are included in the shaded region.

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 ≥ 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 $|2x-4| < 6$

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

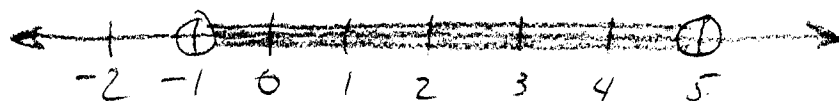
$\frac{2x}{2} < \frac{10}{2}$

$x < 5$

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

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

$x > -1$



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

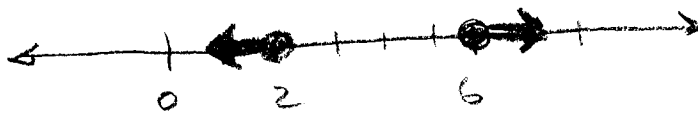
$$|3x-12| \geq 6$$

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

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

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



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

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