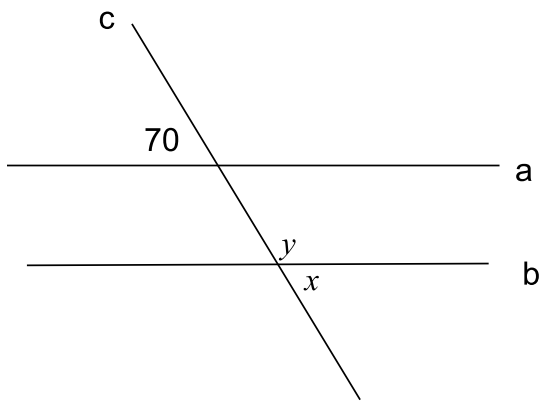
Solutions to Chapter 34: ANGLES



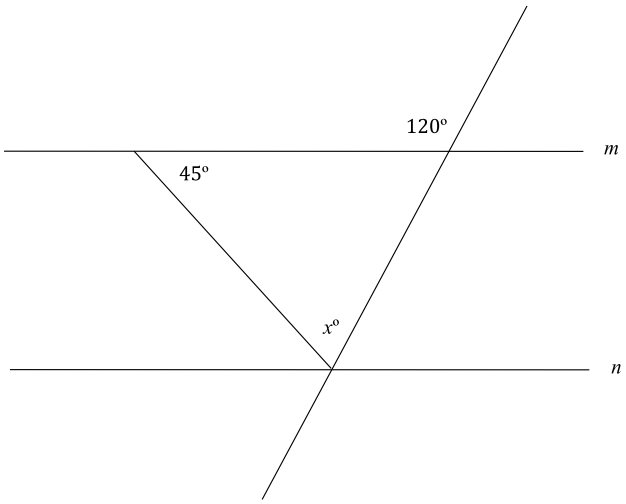
1. In the given figure, line a is parallel to line b, and line c intersects both lines. Which of the following statements is true?

A) The value of y is 70 degrees
B) The value of x is 70 degrees
C) The value of x is 110 degrees
D) The values of x and y cannot be determined from the information given

Solution Strategy:

Since lines a and b are parallel, and line c is a straight line crossing a and b, then all big angles are equal and all small angles are equal. Since angle x is a small angle, it also equals 70 degrees.

Correct Answer: B



2. In the figure above, if line m is parallel to line n, what is the value of x?

A) 115°

B) 75°

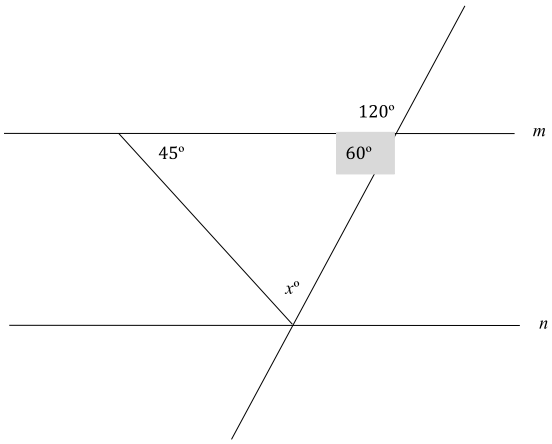
C) 65°

D) 45

Step 1: Label

Since we know the measure of a line is 180°, this means that the angle directly below and to the left of 120 must be 60.

$180 - 120 = 60$

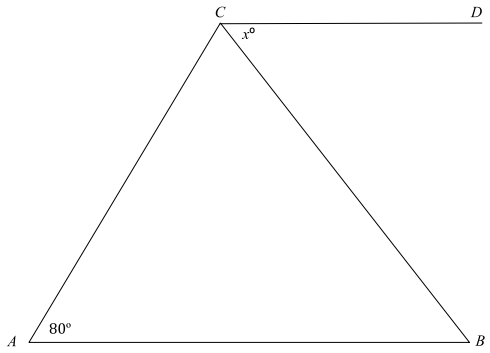


Step 2: Carve out the triangle

Recognizing that the figure is a triangle, and a triangle has 180°, the third angle of the triangle (x) must be:

$180 - 45 - 60 = 75°$

Correct Answer: B



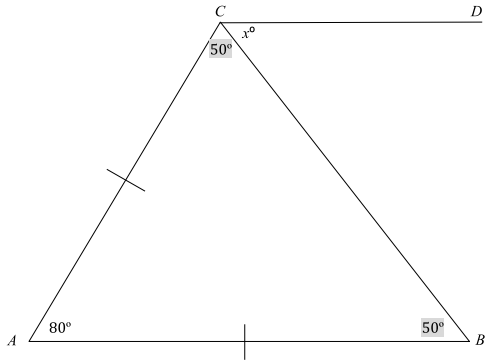
3. In the figure above, $\overline{AB} \simeq \overline{AC}$ and $\overline{AB} \| \overline{CD}$. What is the value of x in degrees?

A) 30
B) 40
C) 50
D) 80

Step 1: Label

Since we are given that $\overline{AB} \simeq \overline{AC}$ we have an isosceles triangle, which is a triangle with 2 equal sides. Since angles opposite equal sides must also be equal, angles ACB and ABC are equal. Since a triangle has 180º, we can subtract 80º from 180º and then divide by 2 to find both angles:

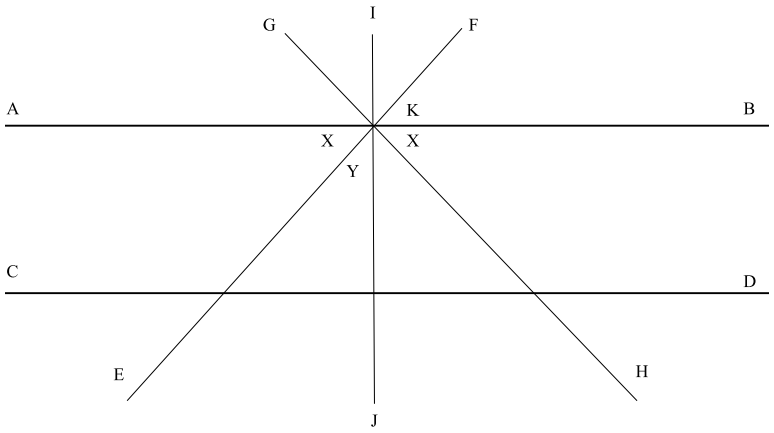
$180 - 80 = 100 \div 2 = 50^{\circ}$



Step 2: Since $\overline{AB} \| \overline{CD}$, understand that angle B and angle x are alternate interior angles since they are inside parallel lines and cut by a transversal.

Therefore the angles will be equal to each other and xº = 50º

Correct Answer: C



4. In the figure above, $\overline{AB} \parallel \overline{CD}$ and $\overline{IJ}$ bisects ∠EKH. Which of the following is equal to $4y$ in terms of x?

A) $360 - 4x$

B) $180 - 3x$

C) $360 + 4x$

D) $180 + 2x$

Step 1: Since $\overline{IJ}$ bisects $\angle EKH$ the angle directly to the right of Y is also equal to Y

Step 2: So now below the line $\overline{AB}$ we have X, X, Y, Y. We know the sum of these 4 angles is equal to 180º since that is how many degrees are in a line.

$X + X + Y + Y = 180º$

$2X + 2Y = 180º$

Step 3: Now we want to take our equation and solve for Y

$2X + 2Y = 180º$

Divide equation by 2 $\rightarrow X + Y = 90$

Subtract X to other side $\rightarrow Y = 90 - X$

Step 4: Now to find $4Y$, multiple the entire equation by 4.

$4(Y = 90 - X) \rightarrow 4Y = 360 - 4X$

Correct Answer: A

Or Plugging In might be quicker:

Step 1: Identify a variable(s) to plug in.

Since x shows up the most and is in the answer choices, let's plug in for x. Let's try 40º.

Step 2: Work the steps of the problem.

Step 3: Put a TV around the Target Value.

From above we know that $X + X + Y + Y = 180°$, $2X + 2Y = 180°$

Plugging in $x = 40$, gives us:

$2(40) + 2y = 180$

$80 + 2y = 180$

$2y = 100$

$y = 50$

Therefore, $4y = 200$

200

TV

Step 4: Check each answer choice to find your Target Value.

When we plug in $x = 40$, we need a TV of 200.

A)	$360 - 4x$	$360 - 4(40) = 200$	***Yes***
B)	$180 - 3x$	$180 - 3(40) = 60$	***No***
C)	$360 + 4x$	$360 + 4(40) = 520$	***No***
D)	$180 + 2x$	$180 + 2(40) = 260$	***No***

Correct Answer: A