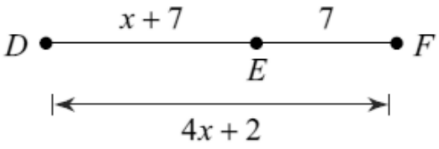
Find *DF*



$x+7+7 = 4x+2$

$x+14 = 4x+2$

$14 = 3x+2$

$12 = 3x$

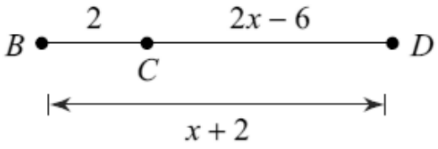
$x = 4$

$DF = 4x+2$

$4(4)+2$

18

6) Find *CD*



$2+2x-6 = x+2$

$2x-4 = x+2$

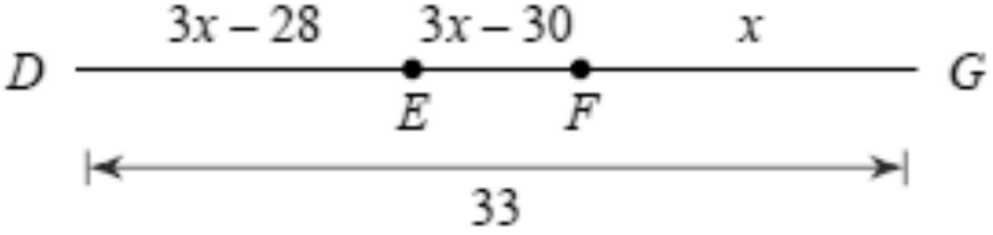
$x = 6$

$CD = 2(6)-6$

$= 12-6$

6

Find DE



$3x-28+3x-30+x=33$

$7x-58=33$

$7x=91$

$x=13$

$DE=3(13)-28$

$39-28$

11

Write the following as a conditional statement If → then form

An isosceles triangle has at least 2 congruent sides

If a triangle is isosceles, then it has at least 2 $\cong$ sides.

Write the converse of your conditional statement.

If a triangle has at least 2 $\cong$ sides, then it is isosceles.

Combine your two statements above into one bicondtional statement.

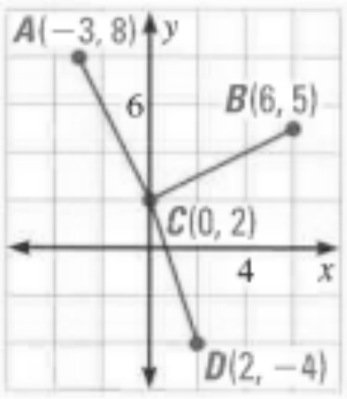
if and only if → middle

No If → then

A triangle is isosceles if and only if it has at least 2 $\cong$ sides

$$d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$$

DISTANCE FORMULA **Find the lengths of the segments. Tell whether any of the segments have the same length.**



AC

$\sqrt{(0-(-3))^2 + (2-8)^2}$

$\sqrt{3^2 + (-6)^2}$

$\sqrt{9 + 36}$

$\sqrt{45}$

BC

$\sqrt{(6-0)^2 + (5-2)^2}$

$\sqrt{6^2 + 3^2}$

$\sqrt{36 + 9}$

$\sqrt{45}$

CD

$\sqrt{(2-0)^2 + (-4-2)^2}$

$\sqrt{2^2 + (-6)^2}$

$\sqrt{4 + 36}$

$\sqrt{40}$

$AC = BC$

$\overline{AC} \cong \overline{BC}$

Find the midpoint with the given endpoints .

$$\left(\frac{x_1+x_2}{2}, \frac{y_1+y_2}{2}\right)$$

(-2, 3) and (8, 5)

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

$$\left(\frac{6}{2}, \frac{8}{2}\right)$$

$$(3, 4)$$

(4, 6) and (-5, -2)

$$\left(\frac{4+(-5)}{2}, \frac{6+(-2)}{2}\right)$$

$$\left(\frac{-1}{2}, \frac{4}{2}\right)$$

$$\left(-\frac{1}{2}, 2\right)$$

You are given one endpoint of a segment R, and the midpoint M.
Find the other endpoint .

$$\left(\frac{x_1+x_2}{2}, \frac{y_1+y_2}{2}\right) = (M_x, M_y)$$

$x_1\ y_1$

R (2, 6) $(-4,-4)$

M (-1, 1)

$M_x\ M_y$

$$\frac{x_1+x_2}{2} = M_x \qquad \frac{y_1+y_2}{2} = M_y$$

$$2\left(\frac{2+x_2}{2}\right) = (-1)(2) \qquad 2\left(\frac{6+y_2}{2}\right) = (1)(2)$$

$$2 + x_2 = -2 \qquad 6 + y_2 = 2$$

$$x_2 = -4 \qquad y_2 = -4$$

R (3, -12)

M (2, -1)

$$2\left(\frac{3+x_2}{2}\right) = (2)2 \qquad 2\left(\frac{-12+y_2}{2}\right) = (-1)(2)$$

$$3 + x_2 = 4 \qquad -12 + y_2 = -2$$

$$x_2 = 1 \qquad y_2 = 10$$

$(1, 10)$

Write the (NOT) inverse and contrapositive of the given conditional statement

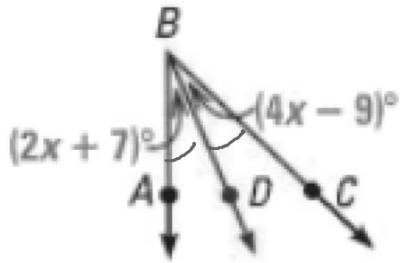
If it is January, then it has 31 days

If it is NOT January, then it does not have 31 days.

If it does not have 31 days, then it is not January.

USING ALGEBRA $\overrightarrow{BD}$ **bisects** $\angle ABC$. **Find the value of** x.

47.

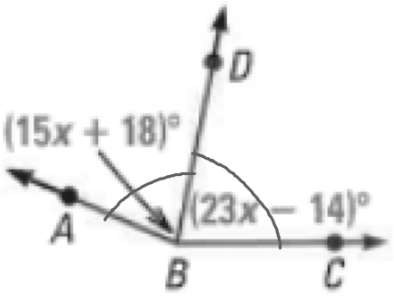


$2x+7=4x-9$

$16=2x$

$x=8$

48.



$15x+18=23x-14$

$-15x \qquad -15x$

$18=8x-14$

$+14 \qquad +14$

$32=8x$

$x=4$

FINDING ANGLES **In Exercises 12–17, complete the statement given that $m\angle EHC = m\angle DHB = m\angle AHB = 90°$**

12. If $m\angle 7 = 28°$, then $m\angle 3 =$ ___?___. 28°

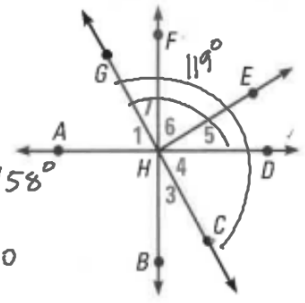
13. If $m\angle EHB = 121°$, then $m\angle 7 =$ ___?___. 31°

14. If $m\angle 3 = 34°$, then $m\angle 5 =$ ___?___. 34°

15. If $m\angle GHB = 158°$, then $m\angle FHC =$ ___?___. 158°

16. If $m\angle 7 = 31°$, then $m\angle 6 =$ ___?___. 59

17. If $m\angle GHD = 119°$, then $m\angle 4 =$ ___?___. 61°



$m\angle 3 + 90 = 121$

$m\angle 3 = 31$

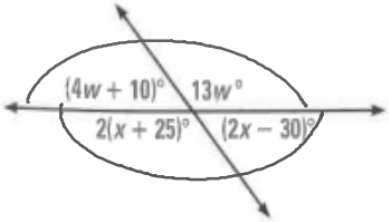
Write the 2 conditional statements implied by the biconditional statement

A quadrilateral is a paralellogram if and only if the opposite angles are congruent

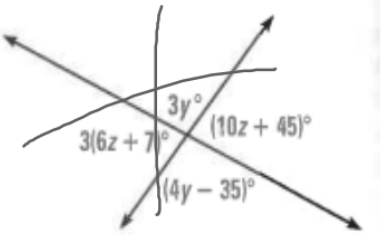
If a quad is a parallelogram, then the opposite ∠'s are ≅.

If the opposite ∠'s are ≅, then the quad is a parallelogram.

Find the value of the variable(s)



28.



$4w+10+13w=180$

$17w+10=180$

$17w=170$

$w=10$

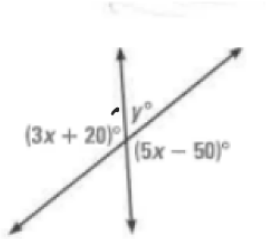
$2(x+25)+2x-30=180$

$2x+50+2x-30=180$

$4x+20=180$

$4x=160$

$x=40$



$3x+20=5x-50$

$20=2x-50$

$70=2x$

$x=35$

$3x+20+y=180$

$3(35)+20+y=180$

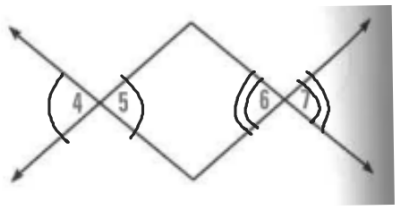
$105+70+y=180$

$125+y=180$

$y=55$

GIVEN ▶ $\angle 5 \cong \angle 6$

PROVE ▶ $\angle 4 \cong \angle 7$



Statement	Reason
1) $\angle 5 \cong \angle 6$	1) Given
2) $\angle 4 \cong \angle 5$, $\angle 6 \cong \angle 7$	2) Vert $\angle$'s $\cong$
3) $\angle 4 \cong \angle 7$	3) Sub prop.

Write the converse of the given conditional statement

If the month is Feburary, then it is the shortest month of the year

Use the conditional statement and the converse you wrote to write a biconditional statement

GIVEN ▶ $\angle 1$ and $\angle 2$ are complements, $\angle 3$ and $\angle 4$ are complements, $\angle 2 \cong \angle 4$

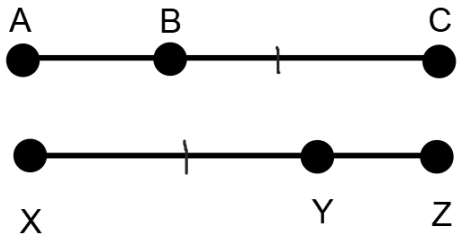
PROVE ▶ $\angle 1 \cong \angle 3$

Statements	Reasons
1. $\angle 1$ and $\angle 2$ are complements, $\angle 3$ and $\angle 4$ are complements, $\angle 2 \cong \angle 4$	1. Given
2. $m\angle 1 + m\angle 2 = 90$ / $m\angle 3 + m\angle 4 = 90$	2. Def. of complementary angles
3. $m\angle 1 + m\angle 2 = m\angle 3 + m\angle 4$	3. Transitive property of equality
4. $m\angle 2 = m\angle 4$	4. ? Def $\cong$ $\angle$'s.
5. $m\angle 1 + m\angle 2 = m\angle 3 + m\angle 2$	5. ? Sub prop
6. $m\angle 1 = m\angle 3$	6. ? Subtraction prop
7. ? $\angle 1 \cong \angle 3$	7. Definition of congruent angles

Given: $\overline{BC} \cong \overline{YX}$

$\overline{AC} \cong \overline{ZX}$

Prove: $\overline{AB} \cong \overline{ZY}$



Statement	Reason
1) $\overline{BC} \cong \overline{XY}$, $\overline{AC} \cong \overline{ZX}$	1) Given
2) BC = YZ, AC = ZX	2) Def ≅ Segs
3) AC = AB + BC XZ = XY + YZ	3) Segs Add post
4) AB + BC = XY + YZ	4) Sub prop
5) AB + BC = XY + BC	5) Sub prop
6)	6) Subtraction Property
7)	7)