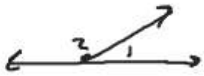
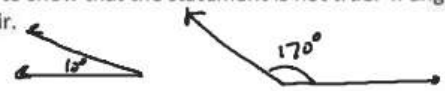
Geometry
Chapter 2 Review

Name _____
Date _____ Per _____

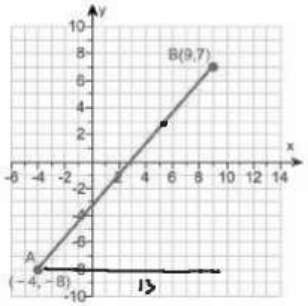
Spiral Review



1. Find a counter example to show that the statement is not true. If angles are supplementary then they form a linear pair.



2. Find the coordinates of the point $\frac{7}{10}$ of the way from A to B.



Distance x-values
$9-(-4)=13$

$(13)(\frac{7}{10}) = \frac{91}{10} = 9.1$

Distance y-values
$7-(-8)=15$

$15(\frac{7}{10}) = 10.5$

$-4+9.1 = 5.1$

$-8+10.5 = 2.5$

$(5.1, 2.5)$

3. Consider the statement: If James has 2 dimes, then he has at least 20 cents.
   a. Is this a true statement? Justify your reasoning.

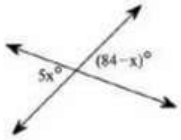
True

   b. Write the converse of the given statement. Is the converse a true statement? Explain.

If James has at least 20 cents, then he has at least 2 dimes.

False 20 pennies
5 Nickels

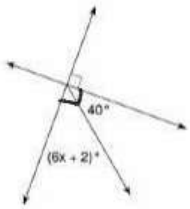
4. Find the value of the variable.



$5x = 84 - x$

$6x = 84$

$x = 14$

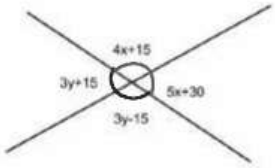


$6x+2+40 = 90$

$6x+42 = 90$

$6x = 48$

$x = 8$



$3y+15+3y-15=180$

$6y = 180$

$y = 30$

$4x+15+5x+30=180$

$9x+45=180$

$9x = 135$

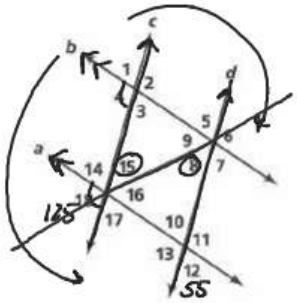
$x = 15$

Properties of Parallel Lines

Section: Properties of Parallel Lines

Use the figure to answer each question in this section.

5. If $c \parallel d, a \parallel b, and\ m\angle 12 = 55°, then\ m\angle 4 =$ 125°

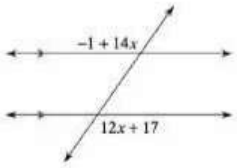


180-55

6. If $\angle 15 \cong \angle 8$ then which two lines are parallel? Explain your answer.

c ll d Converse of Alternate Int ∠'s.

7. Find the value of x.



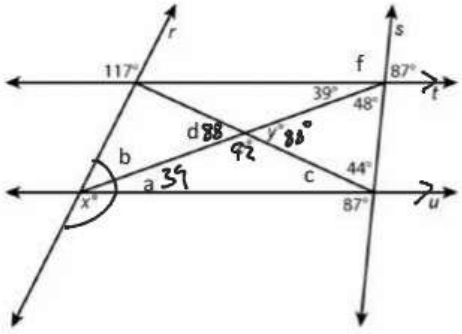
$-1+14x = 12x+17$

$-1+2x = 17$

$2x = 18$

$x = 9$

8. Use the figure to the right. Lines ~~a, b, c, and d~~ r, s, t, u intersect as shown.



a. Which pairs of lines are parallel?

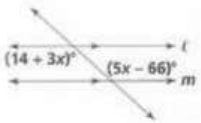
t ll u

b. Find the values of the variables.

a = 39° b = 24 c = 49 d = 88

f = 93 x = 117 y = 88 z = 92

9. Find the value of the variable that will make the lines parallel.

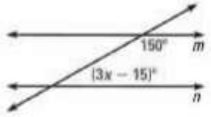


$14+3x = 5x-66$

$14 = 2x-66$

$80 = 2x$

$x = 40$

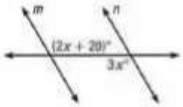


$3x-15+150 = 180$

$3x+135 = 180$

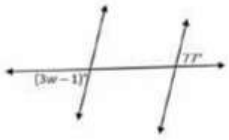
$3x = 45$

$x = 15$



$2x+20 = 3x$

$x = 20$



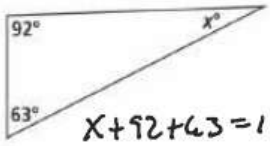
$3w-1 = 77$

$3w = 78$

$w = 26$

Section: Parallel Lines and the Triangle Sum – Theorem

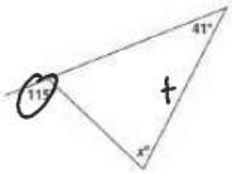
10. Find the value of the variable.



$x+92+63=180$

$x+155=180$

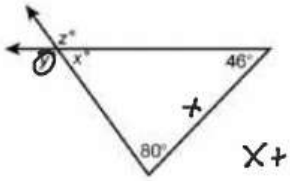
$x=25$



$x+41=115$

$x=74$

11. Given the figure, find the value of the variables.



$y=46+80$

$y=126$

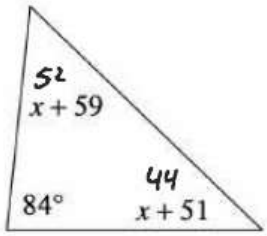
$z=126$

$x+46+80=180$

$x+126=180$

$x=54$

12. Find the value of x.



$x+59+84+x+51=180$

$2x+194=180$

$2x=-14$

$x=-7$

Section: Slopes of Parallel and Perpendicular Lines.

same slope opposite reciprocal

13. Are the lines, parallel, perpendicular, or neither?

$y=\frac{2}{3}x+5$ → m

$3x+2y=8$ → $y=mx+b$

$\frac{2y}{2}=-\frac{3x}{2}+\frac{8}{2}$ $y=-\frac{3}{2}x+4$

$\left(\frac{2}{3}\right)\left(-\frac{3}{2}\right)=-\frac{6}{6}$

$=-1$

Perpendicular

14. Write an equation (slope-intercept form) for the line that is parallel to $y=-4x+5$ that contains the point (1, -6)

$m=-4$

x_1 y_1

$m=-4$

$y-y_1=m(x-x_1)$

$y-(-6)=-4(x-1)$

$y+6=-4x+4$

$y=-4x-2$

$y - y_1 = m(x - x_1)$

15. Write an equation (slope-intercept form) for the line that is perpendicular to $y = 3x - 2$ and passes through the point (9, -2)

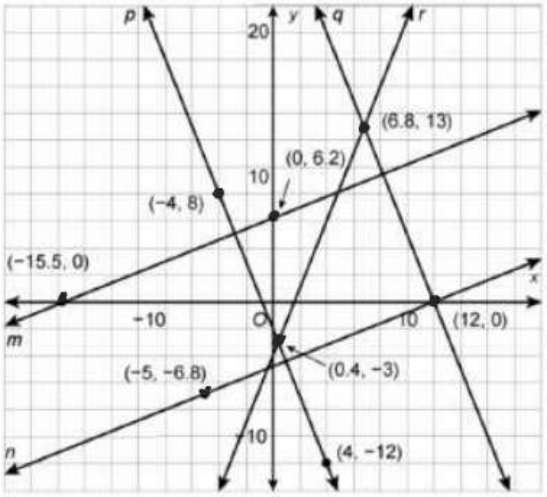
$m = -\frac{1}{3}$

$y - (-2) = -\frac{1}{3}(x - 9)$

$y + 2 = -\frac{1}{3}x + 3$

$y = -\frac{1}{3}x + 1$

16. Given the following figure, find which lines will be parallel and perpendicular. Verify using slopes.



Slope $= \frac{y_2 - y_1}{x_2 - x_1}$

$m = \frac{6.2 - 0}{0 - (-15.5)} = \frac{2}{5}$

$n = \frac{0 - (-6.8)}{12 - (-5)} = \frac{6.8}{17} = \frac{2}{5}$

$p = \frac{-3 - 8}{.4 - (-4)} = -2.5 = -\frac{5}{2}$

$q = \frac{0 - 13}{12 - 6.8} = -2.5 = -\frac{5}{2}$

$r = \frac{13 - (-3)}{6.8 - .4} = 2.5 = \frac{5}{2}$

$m \parallel n$ $p \parallel q$

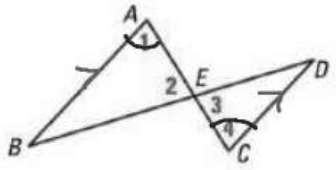
$m \perp p$ $n \perp p$

$m \perp q$ $n \perp q$

Section: Proofs

GIVEN ▶ $\angle 1 \cong \angle 2, \angle 3 \cong \angle 4$

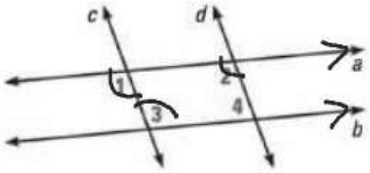
PROVE ▶ $\overline{AB} \parallel \overline{CD}$



Statement	Reason
1. $\angle 1 \cong \angle 2, \angle 3 \cong \angle 4$	1. Given
2. $\angle 2 \cong \angle 3$	2. Vertical $\angle$'s
3. $\angle 1 \cong \angle 4$	3. Substitution prop
4. $\overline{AB} \parallel \overline{CD}$	4. Converse Alt Int $\angle$'s

GIVEN ▶ $a \parallel b, \angle 2 \cong \angle 3$

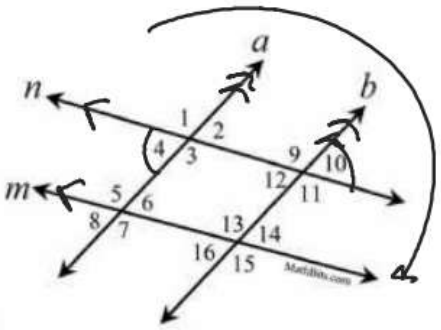
PROVE ▶ $c \parallel d$



Statement	Reason
1. a ∥ b ∠2 ≅ ∠3	1. Given
2. ∠1 ≅ ∠3	2. Alt Int ∠'s ≅
3. ∠1 ≅ ∠2	3. Substitution Property
4. c ∥ d	4. Converse Corresponding ∠'s

Given: $m \parallel n$ and $a \parallel b$

Prove $\angle 4$ *is supplementary* $\angle 15$



Statement	Reason
1. m ∥ n and a ∥ b	1. Given
2. ∠4 ≅ ∠10	2. Alt Ext ∠'s
3. ∠10 and ∠15 are supplementray	3. Same-Side Ext ∠'s
4. m∠10 + m∠15 = 180	4. Definition of Supplementary Angles
5. m∠4 = m∠10	5. Def ≅ ∠'s
6. m∠4 + m∠15 = 180	6. Substitution Property
7. ∠4 + ∠15 are Supp	7. Def of Supp ∠'s