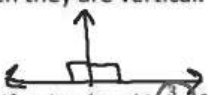
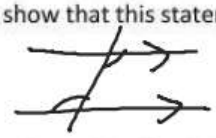
Geometry
Chapter 2 Test

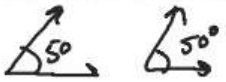
Name _____
Date _____ Per ___

Review Section:

1. Find a counterexample to show that this statement is not true. If two angles are congruent, then they are vertical.





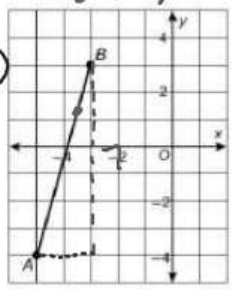


2. If point (p, q) is $\frac{3}{4}$ of the way from A to B, what are the values of q and q?

(P, q)

(-3.5, 1.25)

A(-5,-4) B(-3,3)



Distance Between x-values
$-3-(-5)=2$ $\quad 2(\frac{3}{4})=1.5$

Distance between y-values
$3-(-4)=7$ $\quad 7(\frac{3}{4})=5.25$

$-5+1.5=-3.5$
$-4+5.25=1.25$

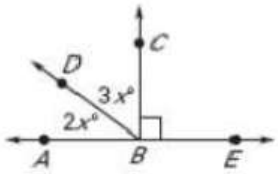
3. Consider the statement: If James has at least two $10 bills, then he has at least $20.

a. Is this a true statement? Justify your reasoning.

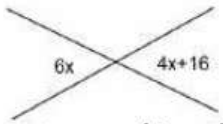
b. Write the converse of this statement. Is this a true statement? Expalin.

If James has at least $20, then he has at least two $10 bills.

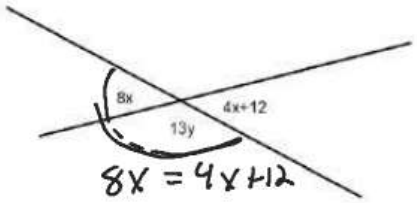
4. Find the value of the variable.



$2x+3x=90$
$5x=90$
$x=18$



$6x=4x+16$
$2x=16$
$x=8$

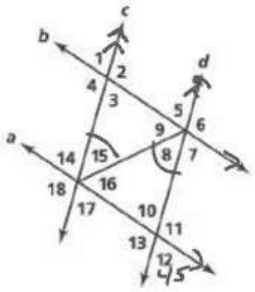


$8x=4x+12$
$4x=12$
$x=3$

$8x+13y=180$
$24+13y=180$
$13y=156$
$y=12$

Section: Properties of Parallel Lines

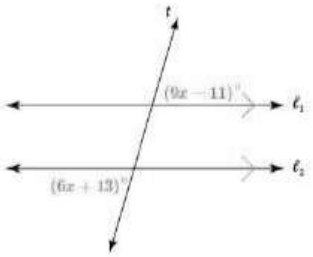
Use the figure to answer each question in this section.



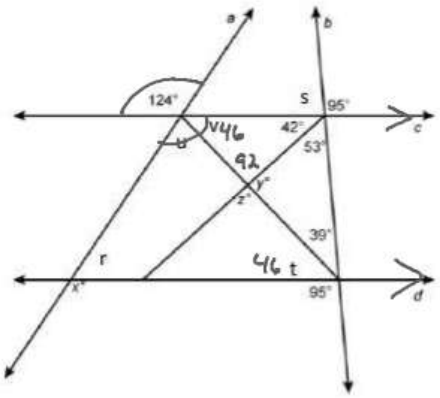
5. If $c \parallel d, a \parallel b,$ and $m\angle 17 = 45°,$ then $m\angle 6 =$ _____

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

7. Find the value of x.



8. Use the figure to the right. Lines *a, b, c,* and *d* intersect as shown.



a. Which pair of lines are parallel?

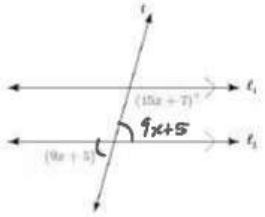
$53+39+y=180$ $\quad z = 53+39$

b. Find the value of the variables.

r = 56 s = 85 t = 46 u = 78

v = 46 x = 124 y = 88 z = 92

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

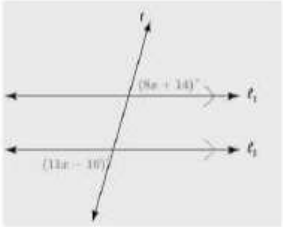


$15x+7+9x+5=180$

$24x+12=180$

$24x=168$

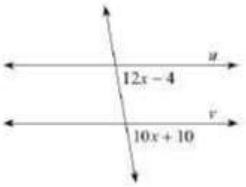
$x=7$



$8x+14=11x-10$

$24=3x$

$x=8$



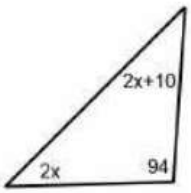
$12x-4=10x+10$

$2x=14$

$x=7$

Section: Triangle Sum and Exterior Angle Theorem

10. Find the values of the variable.

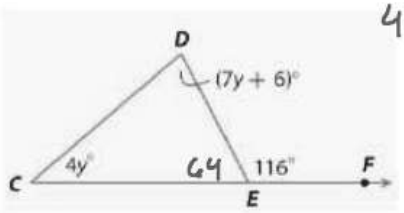


$2x+2x+10+94=180$

$4x+104=180$

$4x=76$

$x=19$



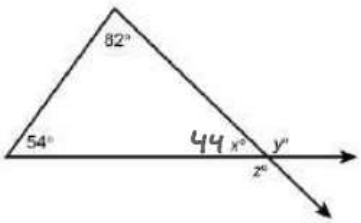
$4y+7y+6=116$

$11y+6=116$

$11y=110$

$y=10$

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



$x+82+54=180$

$x+136=180$

$x=44$

$y=82+54$

$=136$

$z=136$

Section: Slopes of Parallel and Perpendicular Lines

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

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

$3x+2y=6$

$3x+2y=6$

$-3x \quad -3x$

$2y=-3x+6$

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

⊥

13. Write an equation for a line (in slope-intercept form) parallel to $y=-5x-3$ and passing through the point (2, -12)

$m=-5 \quad (2,-12)$

$x_1 \quad y_1$

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

$y+12=-5(x-2)$

$y+12=-5x+10$

$y=-5x-2$

14. Write an equation for a line (in slope intercept form) perpendicular to the line $y=-2x+4$ and passes through the point (-4, -1)

$m=\frac{1}{2} \quad (-4,-1)$

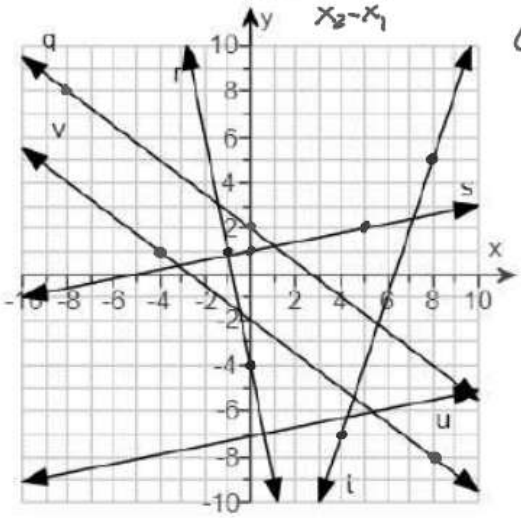
$y+1=\frac{1}{2}(x+4)$

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

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

15. Given the following figure, find which lines will be parallel and/or perpendicular. Verify by using slopes.

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



Slope q
(-8,8) (0,2)
$\frac{2-8}{0-(-8)} = \frac{-6}{8} = \frac{-3}{4}$

Slope v
(-4,1) (8,-8)
$\frac{-8-1}{8+4} = \frac{-9}{12} = \frac{-3}{4}$

Slope s
(0,1) (5,2)
$\frac{2-1}{5-0} = \frac{1}{5}$

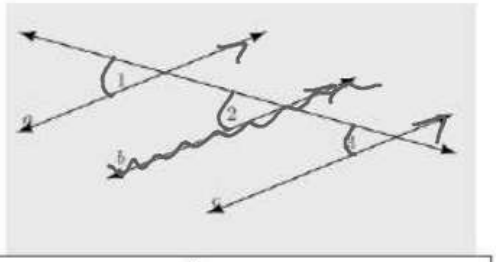
Slope r
(-1,1) (0,-4)
$\frac{-4-1}{0+1} = \frac{-5}{1}$

Slope t
(8,5) (4,-7)
$\frac{-7-5}{4-8} = \frac{-12}{-4} = 3$

q ∥ v s ⊥ r

Section Proofs

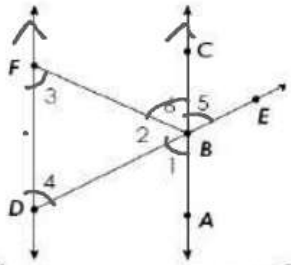
16. Given $a \parallel b, b \parallel c$
Prove $a \parallel c$



Statement	Reason
1. a∥b, b∥c	1. Given
2. ∠1 ≅ ∠2 and ∠2 ≅ ∠3	2. Corresponding ∠'s
3. ∠1 ≅ ∠3	3. Substitution Property
4. a∥c	4. Converse of Corresponding ∠s

17. Given: $\overline{FD} \parallel \overline{CA}$
$\angle 3 \cong \angle 4$

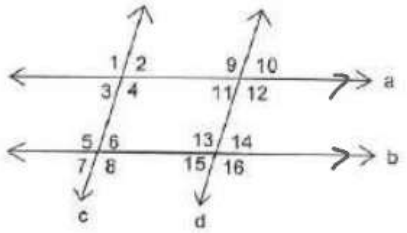
Prove: $\angle 5 \cong \angle 6$



Statement	Reason
1. $\overline{FD} \parallel \overline{CA}$ $\angle 3 \cong \angle 4$	1. Given
2. $\angle 1 \cong \angle 4$	2. Alternate Interior $\angle$'s
3. $\angle 1 \cong \angle 5$	3. Vertical Angles are Congruent
4. $\angle 3 \cong \angle 6$	4. Alternate Interior $\angle$'s $\cong$
5. $\angle 3 \cong \angle 1$	5. Substitution
6. $\angle 3 \cong \angle 5$	6. Substitution
7. $\angle 5 \cong \angle 6$	7. Substitution

18. Given: $a \parallel b$

Prove: $\angle 9$ and $\angle 14$ are supplementary



Statement	Reason
1. $a \parallel b$	1. Given
2. $m\angle 9 + m\angle 11 = 180$	2. Linear Pair Postb.
3. $\angle 11 \cong \angle 14$	3. Alt Interior $\angle$'s
4. $m\angle 11 = m\angle 14$	4. Definition of Congruent Angles
5. $m\angle 9 + m\angle 14 = 180$	5. Substitution Property
6. $\angle 9$ & $\angle 14$ are Supp	6. Def of Supp $\angle$'s