

# Geometry

## Unit 3 Lesson 6

Name:

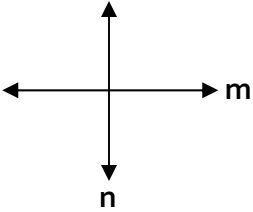
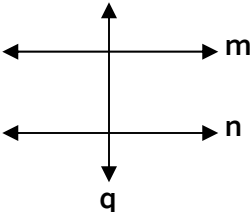
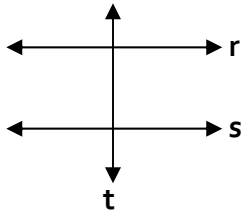
Date:

Period: 1 2 3 4 5 6

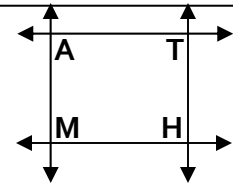
Standards: 2.0, 16.0

Holt: 3-4 Perpendicular Lines p.172

### Objective

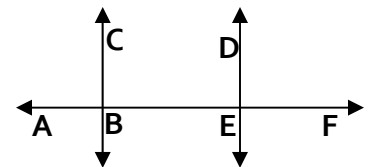
Theorem	Hypothesis	Conclusion
If two intersecting lines form a linear pair of $\cong \angle$ 's, Then the lines are perpendicular		
<b>"Perpendicular Transversal Theorem"</b> In a plane, If a transversal is perpendicular to one of two parallel line, Then it is perpendicular to the other line.		
If two coplanar lines are perpendicular to the same line, then the lines are parallel to each other		

**Proof 1**      Given: (1)  $AM \parallel TH$     (2)  $AM \perp MH$     (3)  $MH \perp TH$   
 Prove:  $AT \parallel MH$



Statements	Reasons

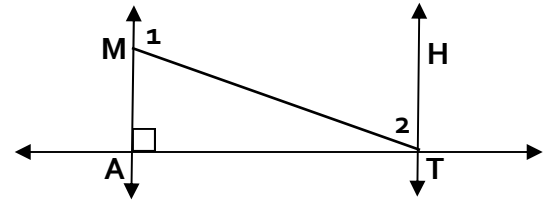
**Proof 2**      Given: (1)  $\angle ABC \cong \angle CBE$     (2)  $DE \perp AF$   
 Prove:  $CB \parallel DE$



Statements	Reasons

**Proof 3** Given: (1)  $m\angle 1 + m\angle 2 = 180$  (2)  $MA \perp AT$

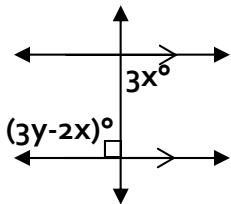
Prove:  $AT \perp TH$



Statements	Reasons

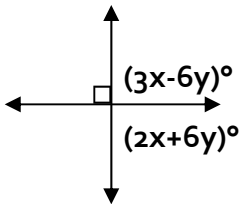
**Exercises**

1. Solve for x and y



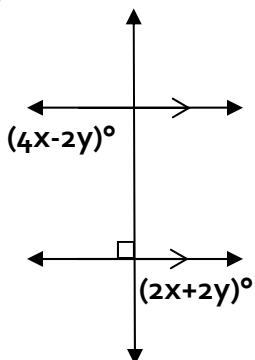
Q What must "3x" equal to? Why?

2. Solve for x and y



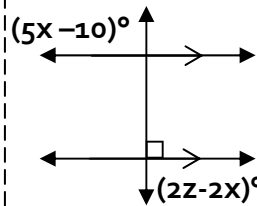
Q What do you know about the two sets of numbers? Why?

3. Solve for x and y



Q What do you know about the two sets of numbers? Why?

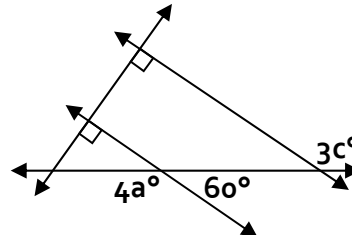
4. Solve for x and z



Q What must "5x-10" equal to? Why? Does it help?

Q What must "2z-2x" equal to? Why? Does it help?

5. Solve for a and c



Q What do you know about 4a and b? How? Why?

Q What about the diagram gives you necessary information to find c? Which theorem or postulate?

# Geometry

## Unit 3 Lesson 6 Sirimanne Edition

Name:

Date:

Period: 1 2 3 4 5 6

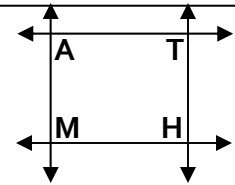
Standards: 2.0, 16.0

Holt: 3-4 Perpendicular Lines p.172

### Objective

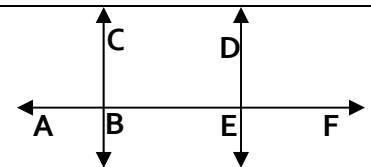
Theorem	Hypothesis	Conclusion
If two intersecting lines form a linear pair of $\cong \angle$ 's, Then the lines are perpendicular		$m \perp n$
<b>"Perpendicular Transversal Theorem"</b> In a plane, If a transversal is perpendicular to one of two parallel line, Then it is perpendicular to the other line.		$n \perp q$
If two coplanar lines are perpendicular to the same line, then the lines are parallel to each other		$r \parallel s$

**Proof 1**      Given: (1)  $AM \parallel TH$     (2)  $AM \perp MH$     (3)  $MH \perp TH$   
 Prove:  $AT \parallel MH$



Statements	Reasons
$AM \parallel TH$	Given
$AM \perp MH$	Given
$AM \perp AT$	$\perp$ Transversal Theorem
$MH \perp TH$	Given
$AT \parallel MH$	2 lines $\perp$ to the same line $\Rightarrow$ $\parallel$ lines

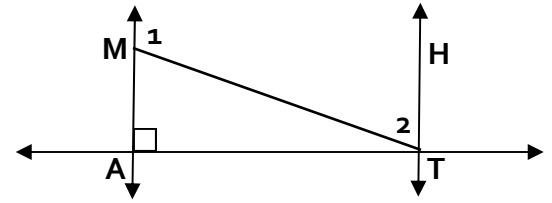
**Proof 2**      Given: (1)  $\angle ABC \cong \angle CBE$     (2)  $DE \perp AF$   
 Prove:  $CB \parallel DE$



Statements	Reasons
$\angle ABC \cong \angle CBE$	Given
$\angle ABC, \angle CBE$ are a linear pair	Def. of linear pair
$CB \perp AF$	Intersecting lines forming linear pair of 2 $\cong \angle$ 's $\rightarrow$ $\perp$ lines
$DE \perp AF$	Given
$CB \parallel DE$	2 lines $\perp$ to the same line $\Rightarrow$ $\parallel$ lines

**Proof 3** Given: (1)  $m\angle 1 + m\angle 2 = 180$  (2)  $MA \perp AT$

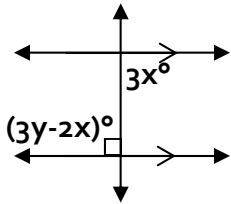
Prove:  $AT \perp TH$



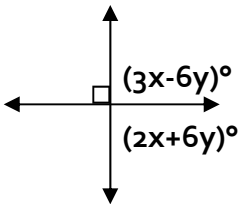
Statements	Reasons
$m\angle 1 + m\angle 2 = 180$	Given
$\angle 1, \angle 2$ are supplementary	Definition of Supplementary
$MA \parallel HT$	Converse of Consecutive $\angle$ 's Theorem
$MA \perp AT$	Given
$AT \perp TH$	$\perp$ Transversal Theorem

**Exercises**

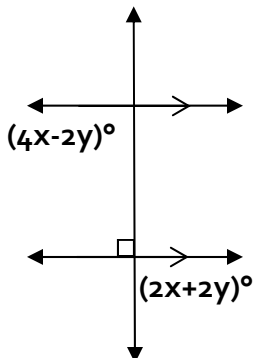
1. Solve for x and y      Q What must "3x" equal to? Why?



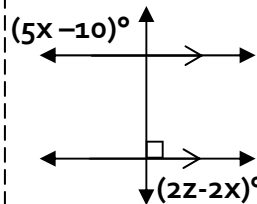
2. Solve for x and y      Q What do you know about the two sets of numbers? Why?



3. Solve for x and y      Q What do you know about the two sets of numbers? Why?

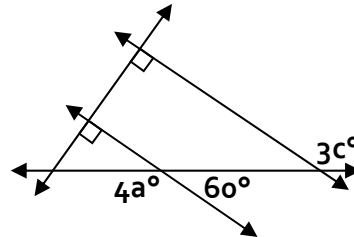


4. Solve for x and z      Q What must "5x-10" equal to? Why? Does it help?



- Q What must "2z-2x" equal to? Why? Does it help?

5. Solve for a and c



- Q What do you know about 4a and b? How? Why?

- Q What about the diagram gives you necessary information to find c? Which theorem or postulate?