Name: _____ Hour: _____

Line and Angle Relationships

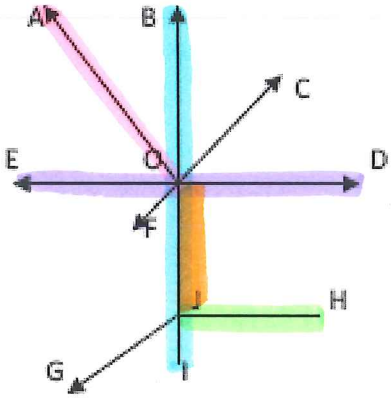
Vocabulary you should remember from elementary and middle school:

ray  $\overrightarrow{PS}$ Set of all pts in one direction	*line*  $\overleftrightarrow{PS}$ set of all pts in both directions	*line segment*  $\overline{PS}$ or $\overline{PS}$ all pts between starting + ending pt
adjacent angles that share a side/ray 	*vertical angles*  They are ≅	*complementary angles* angles that add up to = 90°
supplementary angles angles that add up to = 180°	*linear pair* adjacent + supplementary 	*triangle sum theorem* all 3 angles in a △ add up to = 180°

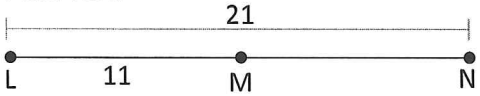
Practice

Fill in the blanks with ray, line or line segment.

1. OA is a ray
2. ED is a line
3. JH is a line segment
4. IB is a ray
5. OJ is a line segment

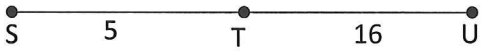


6. Find MN.



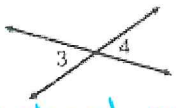
LN = LM + MN
21 = 11 + x
x = 10 units

7. Find SU.

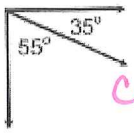


SU = ST + TU
x = 5 + 16
x = 21 units

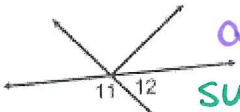
Identify each pair of angles as adjacent, vertical, complementary, supplementary or a linear pair.

8. 

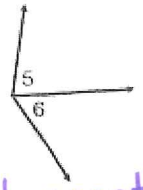
vertical angles

9. 

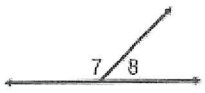
adjacent
complementary

10. 

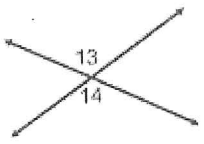
adjacent
supplementary
linear pair

11. 

adjacent

12. 

adjacent
supplementary
linear pair

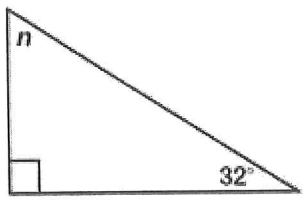
13. 

vertical angles

To find a missing angle in a triangle, we use Triangle Sum Thm.

Find the missing angle.

14.

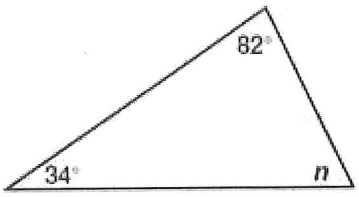


$n + 90 + 32 = 180$

$n + 122 = 180$

$\boxed{n = 58°}$

15.



$n + 34 + 82 = 180$

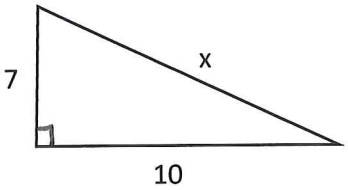
$n + 116 = 180$

$\boxed{n = 64°}$

To find a missing side in a right triangle, we use the Pythagorean Thm: $a^2 + b^2 = c^2$ (hyp)

Find x.

16.



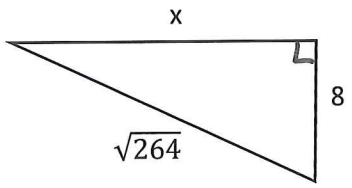
$7^2 + 10^2 = x^2$

$49 + 100 = x^2$

$\sqrt{149} = \sqrt{x^2}$

$\boxed{x = \sqrt{149}}$

17.



$8^2 + x^2 = \sqrt{264}^2$

$64 + x^2 = 264$

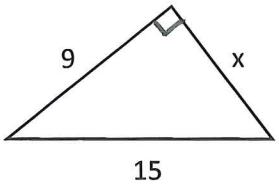
$\sqrt{x^2} = \sqrt{200}$

$\sqrt{100}\ \sqrt{2}$

10

$\boxed{x = 10\sqrt{2}}$

18.



$9^2 + x^2 = 15^2$

$81 + x^2 = 225$

$x^2 = 144$

$\boxed{x = 12}$