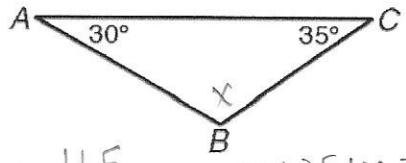
LESSON 7-1

Interior and Exterior Angles

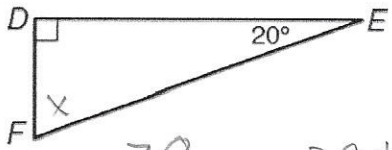
Practice and Problem Solving: A/B

Find the measure of each angle.

1. 

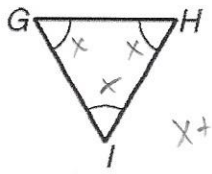
$m\angle B =$ 115 °

$30 + 35 + x = 180$
$x = 115$

2. 

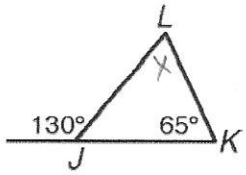
$m\angle F =$ 70 °

$20 + 90 + x = 180$
$x = 70$

3. 

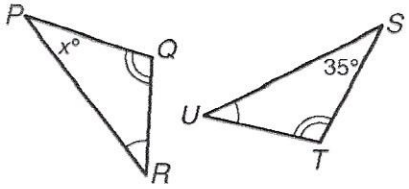
$m\angle G =$ 60 °

$x + x + x = 180$
$3x = 180$
$x = 60$

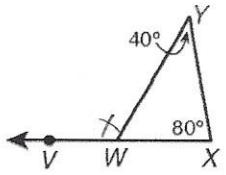
4. 

$m\angle L =$ 65 °

$x + 65 = 130$
$x = 65$

5. 

$m\angle P =$ 35 °

6. 

$m\angle VWY =$ 120 °

$x = 80 + 40$
$x = 120$

Use your knowledge of angle relationships to answer questions 7–10.

7. The sum of the angle measures of a quadrilateral is 360 °.

8. The acute angles of a right triangle are complementary.

9. The measure of an exterior angle of a triangle is equal to the sum__ of the measures of its remote interior angles.

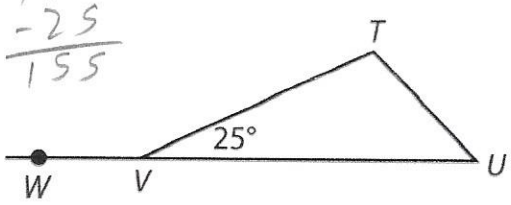
10. The angle measures of a triangle are x, $3x$, and $5x$. Tell the measure of each angle. 20 °, 60 °, 100 °

$x + 3x + 5x = 180$
$9x = 180$
$x = 20$

$x = 20$
$3x = 60$
$5x = 100$

Use triangle *TUV* to answer Problems 11-13.

180
-25
155



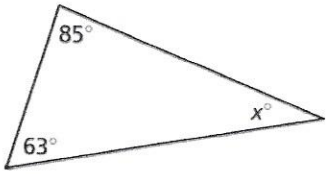
11. Angle *TVW* is an exterior angle of triangle *TUV*.
What is its measure? 155°

12. With respect to angle *TVW*, angles *T* and *U* are remote interior angles.

13. What is the sum of the measures of angles *T* and *U*? 155°

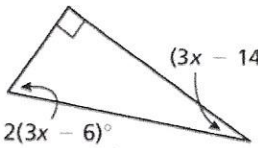
In Exercises 14-17, find the value of *x*.

14.



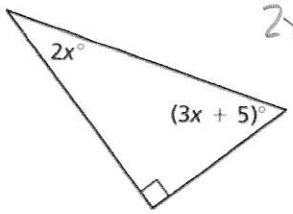
$x+85+63=180$
$x+148=180$
$x=32$

15.



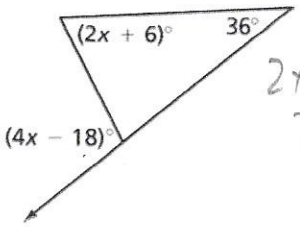
$2(3x-6)+3x-14+90$
$=180$
$6x-12+3x+76=180$
$9x+64=180$
$9x=116$
$x=\frac{116}{9}$

16.



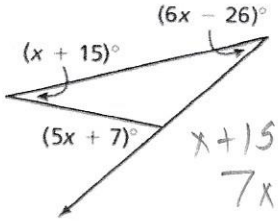
$2x+3x+5+90=180$
$5x+95=180$
$5x=85$
$x=17$

17.



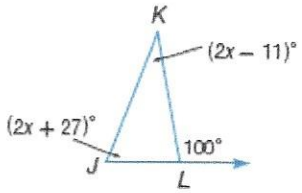
$2x+6+36=4x-18$
$2x+42=4x-18$
$60=2x$
$x=30$

18.



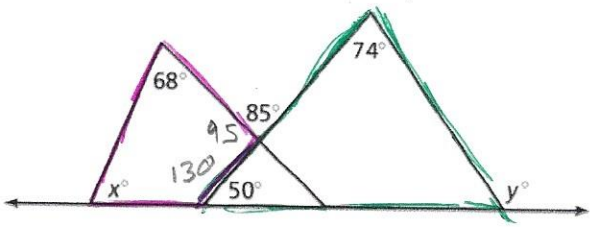
$x+15+6x-26=5x+7$
$7x-11=5x+7$
$2x=18$
$x=9$

19. $m\angle JKL$



$2x-11+2x+27=100$
$4x+16=100$
$4x=84$
$x=21$

20. In the figure, solve for *x* and *y*.



$y=50+74$
$y=124$

$x+68+95+130=360$
$x+293=360$
$x=67$

Find the sum of the interior angle measures of each given polygon.

22. 8 sides

$180(8-2)=1080$

23. 5 sides

$180(5-2)=540$

24. 7 sides

$180(7-2)=900$

25. 12-gon

$180(12-2)=1800$

26. 18-gon

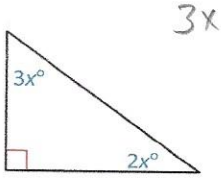
$180(18-2)=2880$

27. 25-gon

$180(25-2)=4140$

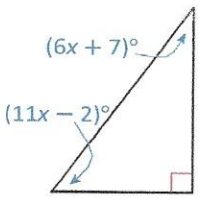
Find the measure of each acute angle.

28.



$3x+2x+90=180$
$5x+90=180$
$5x=90$
$x=18$

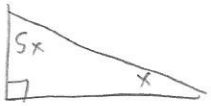
29.



$6x+7+11x-2+90=180$
$17x+95=180$
$17x=85$
$x=5$

Find the measure of each acute angle in the right triangle.

30. The measure of one acute angle is 5 times the measure of the other acute angle.

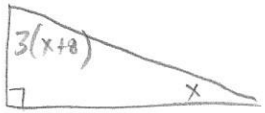


$5x+x+90=180$
$6x+90=180$
$6x=90$
$x=15$
$5x=75$

31. The measure of one acute angle is 8 times the measure of the other acute angle.

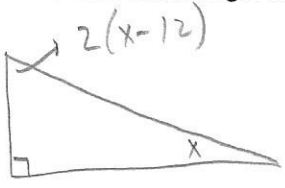
$8x+x+90=180$
$9x+90=180$
$9x=90$
$x=10$
$8x=80$

32. The measure of one acute angle is 3 times the sum of the measure of the other acute angle and 8.



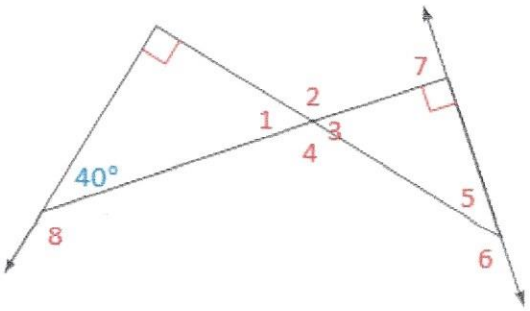
$3(x+8)+x+90=180$
$3x+24+x+90=180$
$4x+114=180$
$4x=66$
$x=16.5$
$3(x+8)=73.5$

33. The measure of one acute angle is twice the difference of the measure of the other acute angle and 12.



$2(x-12)+x+90=180$
$2x-24+x+90=180$
$3x+66=180$
$3x=114$
$x=38$
$2(x-12)=52$

Find the measure of the numbered angle.



36. $\angle 1 = 50$

37. $\angle 2 = 130$

38. $\angle 3 = 50$

39. $\angle 4 = 130$

40. $\angle 5 = 40$

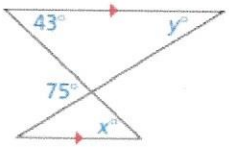
41. $\angle 6 = 140$

42. $\angle 7 = 90$

43. $\angle 8 = 140$

Find the values of x and y.

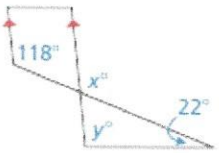
44.



$x = 43$ $75 = y + 43$

$y = 32$

45.



$x = 118$

$118 = 22 + y$

$y = 96$