NAME _____ DATE _____ PERIOD ____

4-1 Practice

Classifying Triangles

ALGEBRA Find x and the measure of each side of the triangle.

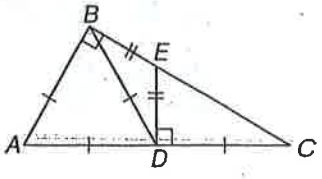
1. $\triangle ABC$ is equilateral with $AB = 3x - 2$, $BC = 2x + 4$, and $CA = x + 10$.

$3x-2 = 2x+4$ $x = 6$ $AB = 16$ $BC = 16$ $AC = 16$

2. $\triangle DEF$ is isosceles, $\angle D$ is the vertex angle, $DE = x + 7$, $DF = 3x - 1$, and $EF = 2x + 5$.

$x+7 = 3x-1$ $8 = 2x$ $x = 4$ $DE = 11$ $DF = 11$ $EF = 13$

Identify the indicated type of triangles if $\overline{AB} \cong \overline{AD} \cong \overline{BD} \cong \overline{DC}$, $\overline{BE} \cong \overline{ED}$, $\overline{AB} \perp \overline{BC}$, and $\overline{ED} \perp \overline{DC}$.



answers can vary

4. right
$\triangle ABC$

5. obtuse
$\triangle BDC$

6. scalene
$\triangle ABC$

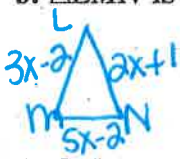
7. isosceles
$\triangle BED$

ALGEBRA Find x and the measure of each side of the triangle.

8. $\triangle FGH$ is equilateral with $FG = x + 5$, $GH = 3x - 9$, and $FH = 2x - 2$.

$x+5 = 3x-9$ $14 = 2x$ $x = 7$ $FG = 12$ $GH = 12$ $FH = 12$

9. $\triangle LMN$ is isosceles, $\angle L$ is the vertex angle, $LM = 3x - 2$, $LN = 2x + 1$, and $MN = 5x - 2$.



$3x-2 = 2x+1$ $x = 3$ $LM = 7$ $LN = 7$ $MN = 13$

Find the measures of the sides of $\triangle KPL$ and classify each triangle by its sides.

10. $K(-3, 2)$ $P(2, 1)$, $L(-2, -3)$

$KP = \sqrt{(2+3)^2+(1-2)^2} = \sqrt{25+1} = \sqrt{26}$

$PL = \sqrt{(-2-2)^2+(-3-1)^2} = \sqrt{16+16} = \sqrt{32}$

$KL = \sqrt{(-2+3)^2+(-3-2)^2} = \sqrt{1+25} = \sqrt{26}$

ISOSCELES

11. $K(5, -3)$, $P(3, 4)$, $L(-1, 1)$

$KP = \sqrt{(3-5)^2+(4+3)^2} = \sqrt{4+49} = \sqrt{53}$

$PL = \sqrt{(-1-3)^2+(1-4)^2} = \sqrt{16+9} = \sqrt{25} = 5$

$KL = \sqrt{(-1-5)^2+(1+3)^2} = \sqrt{36+16} = \sqrt{52}$

SCALENE

12. $K(-2, -6)$, $P(-4, 0)$, $L(3, -1)$

$KP = \sqrt{(-4+2)^2+(0+6)^2} = \sqrt{4+36} = \sqrt{40}$

$PL = \sqrt{(3+4)^2+(-1-0)^2} = \sqrt{49+1} = \sqrt{50}$

$KL = \sqrt{(3+2)^2+(-1+6)^2} = \sqrt{25+25} = \sqrt{50}$

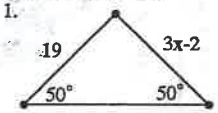
ISOSCELES

Chapter 3: Triangles/Polygons
Lesson 3-2: Isosceles Triangles
Classwork

Name_____
Date_____
Period___

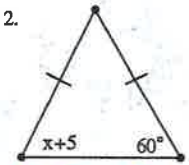
Find the value of x.

1.



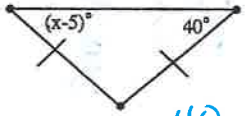
$3x-2=19$
$3x=21$
$x=$ 7

2.



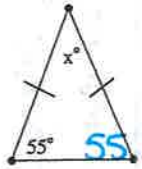
$x+5=60$
$x=$ 55

3.



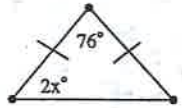
$x-5=40$
$x=$ 45

4.



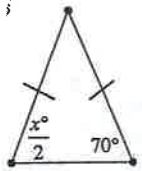
$180-110=70$
$x=$ 70

5.



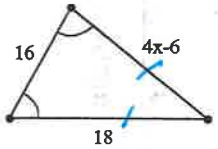
$180-76=104$
$4x=104$
$x=$ 26

6.



$\frac{x}{2}=70$
$x=$ 140

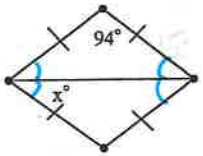
7.



$x=$ 6

$18=4x-6$
$24=4x$
$x=6$

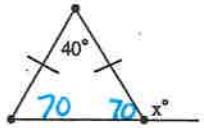
8.



$x=$ 43

$94+2x=180$
$2x=86$
$x=43$

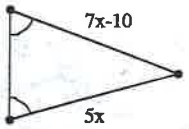
9.



$x=$ 110

$180-40=140$
$\frac{140}{2}=70$
$x+70=180$
$x=110$

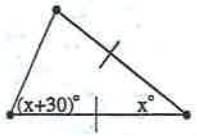
10.



$x=$ 5

$7x-10=5x$
$-10=-2x$
$x=5$

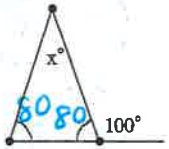
11.



$x=$ 40

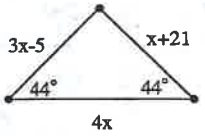
$x+2(x+30)=180$
$3x+60=180$

12.



$x=$ 20

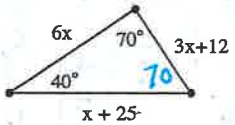
13.



$x=$ 13

$3x-5=x+21$
$2x=26$
$x=13$

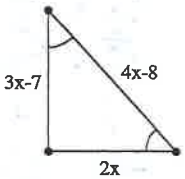
14.



$x=$ 5

$6x=x+25$
$5x=25$
$x=5$

15.



$x=$ 7

$3x-7=2x$
$-7=-x$
$x=7$