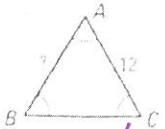
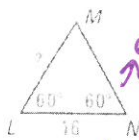
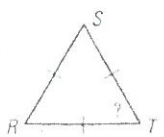
REASONING Find the unknown measure.

7. 

12 (y equil. △)

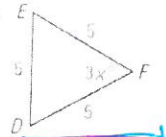
8. 

equil. △ → 16

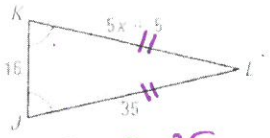
9. 

60°

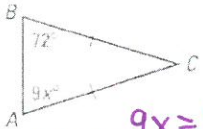
ALGEBRA Find the value of x.

11. 

equil. △ → $3x = 60°$ → $x = 20$

12. 

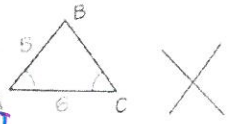
$5x + 5 = 35$ → $x = 6$

13. 

$9x = 72$ → $x = 8$

14. **ERROR ANALYSIS** *Describe* and correct the error made in finding BC in the diagram shown.

$\angle A \cong \angle C$, therefore $\overline{AC} \cong \overline{BC}$. So, $BC = 6$



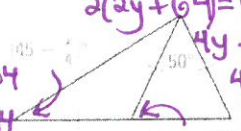
should say $\overline{AB} \cong \overline{CB}$ so $BC = 5$

19. ★ **MULTIPLE CHOICE** What is the value of x in the diagram?

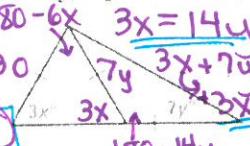
(A) 5 (B) 6 (C) 7 (D) 9

$3x + 4 = 22$
$3x = 18$

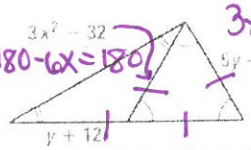
ALGEBRA Find the values of x and y, if possible. *Explain* your reasoning.

20. 

$2(45 - \frac{x}{4}) = 2(2y + 64)$
$90 - \frac{x}{2} = 4y + 128$
$90 - \frac{x}{2} = 1 + 64$
$180 - x = 2 + 128$
$x = 50$

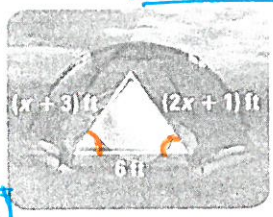
21. 

$180 - 6x = 7y + 3x$
$3x = 14y$
$4y + 128 = 130$
$4y = 2$
$y = 1/2$
$180 - 14y$ → not possible
need two different equations

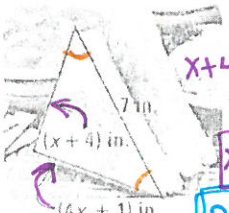
22. 

$3x^2 - 32 = y + 12$
$3x^2 - 32 = 16$
$3x^2 = 48$
$x^2 = 16$
$x = \pm 4$
$3x + 7y + 7y + 180 - 6x = 180$
$7y + 3x = 14y$
$y + 12 = 5y - 4$
$y = 4$

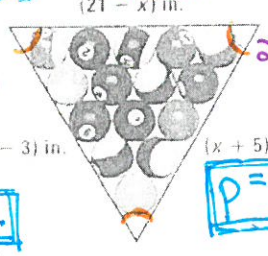
ALGEBRA Find the perimeter of the triangle.

23. 

$x + 3 = 2x + 1$
$2 = x$
$p = 16$ ft.

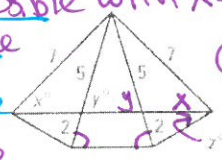
24. 

$x + 4 = 4x + 1$
$3 = 3x$
$x = 1$
$p = 17$ in.

25. 

$2x - 3 = x + 5$
$x = 8$
$p = 39$ in.

REASONING In Exercises 26–29, use the diagram. State whether the given values for x, y, and z are possible or not. If not, *explain*.



26. $x = 90, y = 68, z = 42$ — not possible with $x = 90$, the △ has sum > 180°
27. $x = 40, y = 72, z = 36$ — possible
28. $x = 25, y = 25, z = 15$ — not possible
29. $x = 42, y = 72, z = 33$ — possible

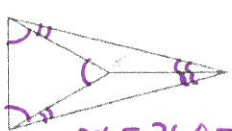
(28) not possible because then both vertex angles would = 130°

30. ★ **SHORT RESPONSE** In $\triangle DEF$, $m\angle D = (4x + 2)°$, $m\angle E = (6x - 30)°$, and $m\angle F = 3x°$. What type of triangle is $\triangle DEF$? *Explain* your reasoning.

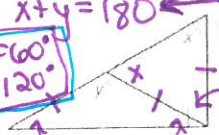
$4x + 2 + 6x - 30 + 3x = 180$
$13x = 208$
$x = 16$
$m\angle D = 66°$, $m\angle E = 66°$, $m\angle F = 48°$
isosceles (2 ≅ sides)

31. ★ **SHORT RESPONSE** In $\triangle ABC$, D is the midpoint of $\overline{AC}$, and $\overline{BD}$ is perpendicular to $\overline{AC}$. *Explain* why $\triangle ABC$ is isosceles. $\triangle ABD \cong \triangle CBD$ by SAS post. and CPCTC, then $\overline{AB} \cong \overline{CB}$

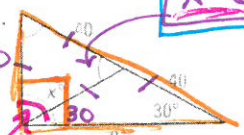
ALGEBRA Find the value(s) of the variable(s). *Explain* your reasoning.

32. 

(33) Solve system
$x + y = 180$
$4x + y = 360$
$3x = 180$
$x = 60$
$2x = 360 - 60$
$2x = 300$
$x = 150$

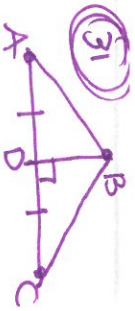
33. 

$x + y = 180$ ← use system
$x = 60°$
$y = 120°$
$180 - 2x$
$\frac{180 - y}{2} = 90 - \frac{y}{2}$
use system → $180 - 2x + 90 - \frac{y}{2} = 90$
$180 = 2x + y/2$

34. 

$x = 60$
60°
$40^2 + (8y)^2 = 80^2$
$1600 + 64y^2 = 6400$
$64y^2 = 4800$
$y^2 = 75$
$y = 5\sqrt{3}$

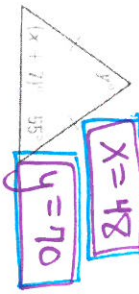
(31)



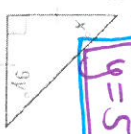
ALGEBRA Find the values of x and y.

15. 

$x = y$
$x + y = 78$
$x = y = 39$

16. 

$x + 7 = 55$
$x = 48$
$y = 70$

17. 

$x = 45$
$y = 5$

18. ★ **SHORT RESPONSE** Are isosceles triangles always acute triangles? *Explain* your reasoning.