Bellwork 12/1/15

The figure is a square. Find x.

\[ 2y = x + 5 \]

\[ y = \frac{x + 5}{2} \]

\[ 2(x + 2) = x + 5 \]

\[ 2x + 4 = x + 5 \]

\[ x = 1 \]

6-4 homework

p. 380
1. \( x = 33.5 \), \( x = 33.5 \), \( x = 113 \), \( x = 33.5 \)
16. \( x = 60 \), \( y = 90 \), \( z = 30 \)
18. \( x = 4 \), \( LN = MP = 4 \)
38. \( x = 3 \), \( y = 5 \) sides are 15
46. See 6-4 notes

p. 373
19. See 6-3 notes
22. \( x = 15 \), \( y = 25 \)

p. 365
39. \( 1 = 71 \), \( 2 = 28 \), \( 3 = 81 \)

Section 6-6: Trapezoids and Kites

OBJ: learn properties of trapezoids and kites

Trapezoids

Trapezoid - a quadrilateral with exactly one pair of parallel sides.

Isosceles Trapezoid - a trapezoid with congruent legs.

Isosceles Trapezoid

The diagonals of an Isosceles Trapezoid are congruent.

\[ AC \cong BD \]

The base angles of an Isosceles Trapezoid are congruent.

\[ \angle A \cong \angle B \]

\[ \angle D \cong \angle C \]

Wedding Cake Theorem

Midsegment Theorem for Trapezoids

The midsegment of a trapezoid is parallel to each base and its length is one half the sum of the length of the bases.

\[ MN = \frac{(AB + DC)}{2} \]

\[ MN = \frac{(8 + 12)}{2} \]

\[ MN = \frac{20}{2} \]

\[ MN = 10 \]

\[ x = \frac{8 + 12}{2} \]

\[ x = \frac{20}{2} \]

\[ x = 10 \]
Solve for $x$ and $y$

\[ \begin{align*}
5y - 2 + 7z &= 180 \\
5y + 10 &= 180 \\
5y &= 170 \\
y &= 34 \\
2x - 5 &= 13 + 3z \\
2x &= 18 + 3z \\
x &= 9 + 1.5z
\]

\[ \begin{align*}
8x - 12 &= 10 + 8x - 12 \\
8x &= 24 \\
x &= 3
\]

Properties:
- The diagonals of a kite are perpendicular

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### Kites

A quadrilateral that has two pairs of consecutive congruent sides, but opposite sides are not congruent.

### Properties:
- The diagonals of a kite are perpendicular

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### Quadrilaterals

<table>
<thead>
<tr>
<th>Quadrilateral</th>
<th>Parallelogram</th>
<th>Rectangle</th>
<th>Rhombus</th>
<th>Square</th>
<th>Trapezoid</th>
<th>Kite</th>
</tr>
</thead>
<tbody>
<tr>
<td>No Parallel Sides</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
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</tr>
<tr>
<td>2 Pairs of Parallel Sides</td>
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<tr>
<td>2 Pairs of Opposite Sides are Congruent</td>
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<tr>
<td>Diagonals are Perpendicular</td>
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</tbody>
</table>

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### Pythagorean Theorem

\[ a^2 + b^2 = c^2 \]

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### Classifications of Quadrilaterals

- Parallelogram
- Rectangle
- Rhombus
- Square
- Trapezoid
- Isosceles Trapezoid
- Kite