5.21 5-47 to 5-58

5-47 a) The shape is an equilateral Δ!

b) No, no way! Get an equilateral Δ is not reflect across no edge.

c) Sine no Δ is equilateral all sides are 2 units.
Sine side a was doubled by no reflection, 2a = 2, so
a = 1 unit.

5-48 a) No, no right Δ must have a 60° angle.

b) Yes! all 30-60-90 triangles are similar, so
they will always be

\[ \frac{x}{\sqrt{3}} \]

\[ \frac{y}{2} = 4 \]

\[ x^2 + y^2 = 8^2 \]

\[ x^2 + (4^2) = 64 \]

\[ x^2 + 16 = 64 \]

\[ x^2 = 48 \]

\[ x = \sqrt{48} \]

\[ x = 4\sqrt{3} \]

c) Damon's Δ is NOT a 30-60-90 Δ since B is not

5-49 a) Since the Δ is an isosceles, right Δ!

b) 45° - 45° - 90° Triangle

c) 1)

\[ \frac{20\sqrt{2}}{20} \]

\[ \frac{4\sqrt{2}}{4\sqrt{2}} \]

\[ \frac{8\sqrt{2}}{8\sqrt{2}} \]

d) 3)

\[ \frac{9\sqrt{3}}{9\sqrt{3}} \]

\[ \frac{16\sqrt{3}}{16\sqrt{3}} \]

\[ \frac{3\sqrt{3}}{3\sqrt{3}} \]

5-50 a) 10

b) 4

c) 6

d) 9
Special Right Δ's

5-45-90

30-60-90

Note: \[ \frac{2x}{\sqrt{3}} = \frac{2x \cdot \sqrt{3}}{2} \]

\[ \frac{x}{\sqrt{3}} = \frac{x \cdot \sqrt{3}}{\sqrt{3}} = \frac{x \sqrt{3}}{3} \]

5-52 a)

\[ \frac{\sqrt{2} \cdot \sqrt{2}}{2} = \frac{2}{2} = 1 \text{ sq. units} \]

\[ \rho = \sqrt{2} + \sqrt{2} + 2 = 2 + 2\sqrt{2} \text{ units} \]

5-53 a)

\[ x = 180 - \left(45 + 5x\right) \]

\[ x = 180 - 12x \]

\[ x = 53^\circ \]

5-45-90

30-60-90
5.54 a) \( AB = 4 \sqrt{2} \)

- \( \triangle ABD \) is a 45-45-90 \( \triangle \)
- You could also use Pythagorean Theorem.
- \( ABB'AA' \) is a trapezoid.
- \( A = \frac{1}{2} (10 + 2) \cdot 4 \)
- \( A = 2 (12) = 24 \) sq. units

5.56 a) There are several correct answers:
- \( x \) is prime
- \( x \) is odd
- \( x \) is even
- \( x \) is an integer

5.57 on page 4

5.58 a) Not similar, sides not proportional.

5.59 a) Yes, all corresponding \( \triangle \)s are \( \sim \).
- \( MN \sim QR \)
- \( MP \sim AR \)
- \( \triangle MNP \sim \triangle SER \)
- \( NP \sim RS \)
- \( \triangle \)s are \( \sim \) by \( \text{SSS} \).
- Reflect \( \triangle \)s, translate, then dilate.

5.60 on page 4

b) \( D \) is a 450-450-90 \( \triangle \).
- Each leg is 6 units long.
- The hypotenuse of \( \triangle D \) is 6\( \sqrt{2} \) units long.

\( \frac{5}{8} = 0.625 \)
- \( \angle LKH = \angle LK \)
- \( \frac{5}{8} = 0.625 \)

\( \triangle \)s \( \sim \) \( \triangle JKL \).

Rotate \( \triangle \)s, translate, then dilate by \( \text{SAS} \).

\( \frac{4}{7} = \frac{1}{2} \)
- \( LU = \angle LX \)
- \( \angle LV = \angle LX \)
- \( \triangle \)s \( \sim \) \( \triangle \)s by \( \text{SSS} \).

Rotate \( \triangle \)s, translate, then dilate by \( \text{SAS} \).
5.55 53.4% of students are involved in a club or study 4 hours or more.

+ 35.7% involved in a club
+ 27.8% studied 4 or more hours
\[ \frac{63.5\%}{\text{Overall}} \]

\[ 63.5\% - 53.4\% = 10.1\% \]

\[ P(\text{student involved in club } | \text{ studied 4 or more hours}) = 10.1\% \]

5.57 a) 500; 2,000; 3,500

+ 1500 + 1500
\[ a_n = 500 + 1500(n-1) \]
\[ = 1500n - 1000 \]

b) 30; 130; 750; 3,750; ...

\[ x^5 \]
\[ x^5 \]
\[ x^5 \]
\[ a_n = 30(5)^{n-1} = 6(5)^n \]