10. $A = \frac{1}{2}bh = \frac{1}{2}(8)\left(4\sqrt{3}\right) =$
$(4)\left(4\sqrt{3}\right) = 16\sqrt{3}$ in^2
11. Each of the smaller triangles are $45°-45°-90°$ triangles, so they both have a pair of legs with equal measures. Therefore, the base of the larger triangle has a measure of $7 + 7 = 14$ inches. The hypotenuse of each of the smaller triangles is $\sqrt{2}$ times the leg, or $7\sqrt{2}$.
$P = S+S+S = 14+7\sqrt{2}+7\sqrt{2} =$
$14+14\sqrt{2} \approx 33.80$ in
12. $A = \frac{1}{2}bh = \frac{1}{2}(14)(7) = 49$ in^2
13. 8
14. $\frac{\sqrt{5}}{3\sqrt{2}} \times \frac{\sqrt{3}}{4\sqrt{2}} = \frac{\sqrt{15}}{12\sqrt{4}} =$
$\frac{\sqrt{15}}{12(2)} = \frac{\sqrt{15}}{24}$
15. $V = \frac{4}{3}\pi r^3 \approx \frac{4}{3}(3.14)(4)^3 \approx$
267.95 in^3
16. $A = 4\pi r^2 \approx 4(3.14)(4)^2$
$= 200.96$ in^2
17. Exterior angles add up to 360°, so the measure of each exterior angle $= \frac{360°}{18} = 20°$.
Interior angles $= 180°-20° = 160°$
18. line or line segment or ray
19. $m\angle A = 180°-72° = 108°$
20. They are supplementary angles.

Systematic Review 26E

1. $\angle RQS \cong \angle TQS$
2. definition of bisector
3. $\overline{QS} \cong \overline{QS}$
4. reflexive property
5. $\triangle RSQ \cong \triangle TSQ$
6. LA
7. $\overline{RQ} \cong \overline{TQ}$
8. CPCTRC
9. convert 30 cm to m:
$\frac{30}{100} = .3$
$V = Bh = \pi r^2 h \approx 3.14(.3)^2(4) \approx$
1.13 m^3
10. $SA = 2\pi r^2 + 2\pi rh \approx$
$2(3.14)(.3)^2 + 2(3.14)(.3)(4) \approx$
$.57 + 7.54 = 8.11$ m^2
Your answer may differ slightly from this, depending upon how and when you rounded.
11. side-side-side
12. side-angle-side
13. angle-side-angle
14. angle-angle-side
15. hypotenuse-leg
16. leg-leg
17. hypotenuse-angle
18. leg-angle
19. $A = \pi r^2 \cong 3.14(2X)^2 = 3.14(2X)(2X) =$
$3.14\left(4X^2\right) = 12.56X^2$ units^2
20. $(2X)^2 + (3X)^2 = H^2$
$4X^2 + 9X^2 = H^2$
$13X^2 = H^2$
$\sqrt{13X^2} = H$

Lesson Practice 27A

1. $\overline{AB} \perp \overline{BD}$
2. $\overline{EC} \perp \overline{BD}$
3. $\angle ABD \cong \angle ECD$
4. definition of perpendicular
5. $\angle EDC \cong \angle ADB$
6. reflexive property

7. $\triangle ABD \sim \triangle ECD$
8. AA
9. $\overline{AB} \parallel \overline{CD}$
10. $\angle B \cong \angle D$
11. alternate interior angles
12. $\angle AEB \cong \angle CED$
13. vertical angles
14. $\triangle ABE \sim \triangle CDE$
15. AA

For problems using proportions, there is often more than one possible way to set up the proportion. The student can use any method that results in a correct answer.

16. $\frac{5}{10} = \frac{8}{X}$
$5X = 80$
$X = 16$
17. $\frac{10}{15} = \frac{X}{24}$
$\frac{240}{15} = X$
$X = 16$
18. $\frac{15}{25} = \frac{6}{X}$
$15X = 150$
$X = 10$
19. $\frac{8}{10} = \frac{X}{13}$
$\frac{104}{10} = X$
$X = 10.4$
20. $\frac{5}{X} = \frac{6}{10}$
$50 = 6X$
$X = \frac{50}{6} = 8\frac{1}{3}$

Lesson Practice 27B

1. $\angle DAB \cong \angle EBC$
2. $\angle ACD \cong \angle BCE$
3. reflexive property
4. $\triangle DAC \sim \triangle EBC$
5. AA
6. $\angle ABC \cong \angle ADB$
7. given
8. $\angle DAB \cong \angle BAC$
9. reflexive property
10. $\triangle ABC \sim \triangle ADB$
11. AA
12. $\frac{X}{10} = \frac{5}{8}$
$8X = 50$
$X = \frac{50}{8} = 6\frac{1}{4}$ or 6.25
13. $\frac{X}{4} = \frac{9}{6}$
$6X = 36$
$X = 6$
14. $\frac{X}{15} = \frac{33}{25}$
$25X = 495$
$X = \frac{495}{25} = 19\frac{4}{5}$ or 19.8
15. $\frac{X}{13} = \frac{6}{15}$
$15X = 78$
$X = \frac{78}{15} = 5\frac{1}{5}$ or 5.2
16. $\frac{X}{6} = \frac{15}{10}$
$10X = 90$
$X = 9$
17. $\frac{(X+5)}{5} = \frac{16}{10}$
$10(X+5) = 80$
$10X + 50 = 80$
$10X = 30$
$X = 3$

Systematic Review 27C

1. $\angle FGH \cong \angle FJK$
2. definition of perpendicular
3. $\angle GFH \cong \angle JFK$
4. reflexive property
5. $\triangle FGH \sim \triangle FJK$

6. AA
7. $\angle RCT$ and $\angle ETC$ are right angles
8. definition of rectangle
9. $\overline{RC} \cong \overline{ET}$
10. definition of rectangle
11. $\overline{CT} \cong \overline{CT}$
12. reflexive property
13. $\triangle ECT \cong \triangle RTC$
14. LL
15. yes: CPCTRC
16. $\frac{X}{10} = \frac{15}{25}$
    $25X = 150$
    $X = 6$
17. exterior angles add up to 360°
    $\frac{360°}{36°} = 10$ sides: decagon
18. A decagon can be divided into 10 congruent triangles. The area of one of these triangles would be:
    $A = \frac{1}{2}bh = \frac{1}{2}(5)(3\sqrt{2}) = 7.5\sqrt{2}$ cm^2
    $7.5\sqrt{2}\,(10 \text{ triangles}) = 75\sqrt{2}$ cm^2
    ≈ 106.07 cm^2
19. $180° - 105° = 75°$: supplementary angles
20. $m\angle\alpha = 180° - (43° + 75°) =$
    $180° - 118° = 62°$

Systematic Review 27D

1. $\angle AEB \cong \angle DCB$
2. alternate interior angles
3. $\angle ABE \cong \angle DBC$
4. vertical angles
5. $\triangle AEB \sim \triangle DCB$
6. AA
7. $\overline{AB} \cong \overline{CB}$
8. given
9. $\overline{BD} \cong \overline{BD}$
10. reflexive property
11. $\triangle ABD \cong \triangle CBD$
12. HL
13. $\overline{AD} \cong \overline{CD}$
14. CPCTRC
15. $\frac{X}{5} = \frac{30}{10}$
    $10X = 150$
    $X = 15$
16. exterior angles add up to 360°:
    $\frac{360°}{45°} = 8$ sides: octagon
17. Area of one triangle:
    $A = \frac{1}{2}bh = \frac{1}{2}(10)(12) = 60$ m^2
    Area of octagon:
    60 m^2(8 triangles) = 480 m^2
18. $P = 8(10) = 80$ m
19. $180° - 99° = 81°$: supplementary angles
20. $m\angle A = 180° - (33° + 81°) =$
    $180° - 114° = 66°$

Systematic Review 27E

1. $\angle 1 \cong \angle 2$
2. given
3. $\angle MLN \cong \angle QPR$
4. two angles with the same measure are congruent
5. $\triangle LMN \sim \triangle PQR$
6. AA
7. $\overline{CF} \cong \overline{CD}$
8. definition of isosceles triangle
9. $\angle FCM \cong \angle DCM$
10. definition of bisector
11. $\overline{CM} \cong \overline{CM}$
12. reflexive property
13. $\triangle CDM \cong \triangle CFM$
14. SAS

15. $\frac{(X+12)}{12} = \frac{20}{15}$

$15(X+12) = 240$

$15X + 180 = 240$

$15X = 60$

$X = 4$

16. Area of circle:

$A = \pi r^2 \approx 3.14(6)^2 = 113.04 \text{ ft}^2$

Sector is $\frac{330^\circ}{360^\circ} = \frac{11}{12}$ of circle

$\frac{11}{12}(113.04 \text{ ft}^2) = 103.62 \text{ ft}^2$

17. Volume of cylinder:

$V = Bh = \pi r^2 h \approx$

$3.14(6)^2(4.5) = 508.68 \text{ ft}^3$

Sector is $\frac{330^\circ}{360^\circ} = \frac{11}{12}$ of cylinder

$\frac{11}{12}(508.68 \text{ ft}^3) = 466.29 \text{ ft}^3$

18. $2X^\circ + 3X^\circ = 180^\circ$

(supplementary angles)

$5X^\circ = 180^\circ$

$X = 36^\circ$

19. $4X^\circ + X^\circ = 90^\circ$

(complementary angles)

$5X^\circ = 90^\circ$

$X = 18^\circ$

20. $P = S + S + S = 2X + 6X + 4X$

$2X + 6X + 4X = 12$

$12X = 12$

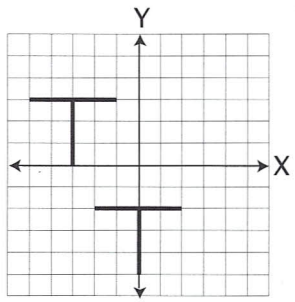
$X = 1$

Lesson Practice 28A

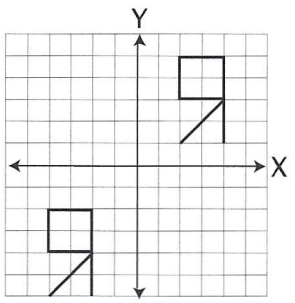
Here are some ideas to help with transformational geometry. For reflection problems, try placing the edge of a hand mirror on the axis of reflection, facing the figure to be reflected. The reflection in the mirror will show the image that would be the result of geometric reflection.

For rotation problems, lay a piece of tracing paper over the graph, trace the original figure, and plot the point of rotation. Without moving the tracing paper, insert a pin through the point of rotation and into the graph on the student page. Now, rotate the tracing paper counterclockwise the indicated number of degrees, and the new position of the image on the tracing paper will indicate the result of geometric rotation.

1.



2.



3.