2. $L^2 + 2^2 = \left(\sqrt{13}\right)^2$

$L^2 + 4 = 13$

$L^2 = 9$

$L = 3$ units

3. $\left(2\sqrt{2}\right)^2 + \left(5\sqrt{2}\right)^2 = H^2$

$(2)(2)\sqrt{2}\sqrt{2} + (5)(5)\sqrt{2}\sqrt{2} = H^2$

$4\sqrt{4} + 5\sqrt{4} = H^2$

$4(2) + 25(2) = H^2$

$8 + 50 = H^2$

$58 = H^2$

$\sqrt{58}$ units $= H$

4. $\left(\frac{1}{\sqrt{2}}\right)^2 + \left(\frac{1}{\sqrt{3}}\right)^2 = H^2$

$\frac{(1)(1)}{\sqrt{2}\sqrt{2}} + \frac{(1)(1)}{\sqrt{3}\sqrt{3}} = H^2$

$\frac{1}{\sqrt{4}} + \frac{1}{\sqrt{9}} = H^2$

$\frac{1}{2} + \frac{1}{3} = H^2$

$\frac{3}{6} + \frac{2}{6} = H^2$

$\frac{5}{6} = H^2$

$\sqrt{\frac{5}{6}} = H$

$\frac{\sqrt{5}}{\sqrt{6}} = H$

$\frac{\sqrt{5}\sqrt{6}}{\sqrt{6}\sqrt{6}} = H$

$\frac{\sqrt{30}}{\sqrt{36}} = H$

$\frac{\sqrt{30}}{6}$ units $= H$

Test 20

1. B: hypotenuse
2. D: congruent
3. C: isosceles
4. E: Pythagorean theorem
5. B: $\sqrt{2}$
6. A: $25\sqrt{2}$
7. C: $3\sqrt{2}\sqrt{2} = 3\sqrt{4} = 3(2) = 6$
8. A: $\frac{9\sqrt{2}}{\sqrt{2}} = \frac{9}{1} = 9$
9. B: one leg $= \frac{2}{\sqrt{2}} = \frac{2\sqrt{2}}{\sqrt{2}\sqrt{2}} = \frac{2\sqrt{2}}{\sqrt{4}} = \frac{2\sqrt{2}}{2} = \frac{\sqrt{2}}{1} = \sqrt{2}$

   both legs $= \sqrt{2} + \sqrt{2} = 2\sqrt{2}$
10. E: A, B and C
11. A: 7 because it is a $45°-45°-90°$ triangle and the legs are congruent
12. C: $7\sqrt{2}$ by rule for $45°-45°-90°$ triangles
13. D: $m\angle\alpha = 180° - (90° + 45°) = 180° - 135° = 45°$
14. A: $2\sqrt{3}$ because the legs are congruent
15. E: $2\sqrt{3}\sqrt{2} = 2\sqrt{6}$ so none of the above

Test 21

1. D: $180° - (60° + 30°) = 180° - 90° = 90°$
2. A: scalene
3. D: 2 times as long
4. B: dividing by 2
5. C: $\sqrt{3}$ times as long

6. B: the side opposite the 30° angle is the short side, so the hypotenuse would be $2(4\sqrt{5}) = 8\sqrt{5}$
7. E: $2(2A) = 4A$
8. E: $14R \div 2 = 7R$
9. B: $\frac{12}{\sqrt{3}} = \frac{12\sqrt{3}}{\sqrt{3}\sqrt{3}} = \frac{12\sqrt{3}}{\sqrt{9}} = \frac{12\sqrt{3}}{3} = \frac{4\sqrt{3}}{1} = 4\sqrt{3}$
10. C: $m\angle\alpha = 180° - (90° + 60°) = 180° - 150° = 30°$
11. A: $14 \div 2 = 7$
12. D: $7\sqrt{3}$
13. B: $m\angle\beta = 180° - (90° + 30°) = 180° - 120° = 60°$
14. A: $4\sqrt{3}$
15. C: $2(4) = 8$

Test 22

1. B: unproven and obvious
2. E: postulates
3. C: congruent
4. A: 360°
5. B: rhombus
6. D: complementary
7. B: 180°
8. E: congruent
9. C: supplementary
10. B: trapezoid
11. C: $R + S > T$
12. C: The figure described may be a rhombus, rectangle or square, but is definitely a parallelogram.
13. B: right
14. E: perpendicular
15. D: parallel

Test 23

1. B: congruent
2. D: 180°
3. B: $\overline{SV}$
4. D: $\angle TVS$
5. A: $\angle VST$
6. A: $\triangle SVT$
7. E: $\overline{TV}$
8. B: $\angle SRQ$
9. D: $m\angle C = 180° - 118° = 62°$
10. E: $m\angle B = 180° - 113° = 67°$
11. B: $m\angle A = 180° - (62° + 67°) = 180° - 129° = 51°$
12. B: $m\angle D = 180° - 51° = 129°$
13. B: $m\angle B = 180° - 110° = 70°$
14. C: $m\angle A = 180° - (45° + 70°) = 180° - 115° = 65°$
15. D: $m\angle D = 180° - 65° = 115°$

Test 24

1. B: the other two angles
2. A: they are congruent by SSS
3. E: I, II, and IV, because of SAS
4. A: A = A
5. C: $\overline{GH} \cong \overline{HE}$
6. D: congruent
7. C: SSS
8. B: SAS
9. A: definition of a rhombus
10. D: reflexive property
11. C: SSS
12. D: definition of midpoint
13. C: vertical angles are congruent
14. B: SAS
15. B: postulates are unproven statements used to prove theorems