11. D: $5^2+L^2=\left(\sqrt{61}\right)^2$

$25+L^2=61$

$L^2=36$

$L=6$

12. B: $12^2+L^2=13^2$

$144+L^2=169$

$L^2=25$

$L=5$

13. A: $ST=12$

$12^2+L^2=20^2$

$144+L^2=400$

$L^2=256$

$L=16$

14. B: $A=\frac{1}{2}bh=\frac{1}{2}(24)(16)$

$=192 \text{ units}^2$

15. E: $A=8(192)=1{,}536 \text{ units}^2$

Test 19

1. B: denominator

2. E: 1

3. A: common denominator

4. A: $\frac{5}{\sqrt{3}}=\frac{5\sqrt{3}}{\sqrt{3}\sqrt{3}}=\frac{5\sqrt{3}}{\sqrt{9}}=\frac{5\sqrt{3}}{3}$

5. D: $\frac{8\sqrt{2}}{\sqrt{4}}=\frac{8\sqrt{2}}{2}=\frac{4\sqrt{2}}{1}=4\sqrt{2}$

6. B: $\frac{4\sqrt{3}}{\sqrt{8}}=\frac{4\sqrt{3}\sqrt{2}}{\sqrt{8}\sqrt{2}}=\frac{4\sqrt{6}}{\sqrt{16}}=$

$\frac{4\sqrt{6}}{4}=\frac{\sqrt{6}}{1}=\sqrt{6}$

7. B: $\frac{5\sqrt{5}}{\sqrt{5}}=\frac{5}{1}=5$

8. A: $\frac{3\sqrt{7}}{\sqrt{10}}=\frac{3\sqrt{7}\sqrt{10}}{\sqrt{10}\sqrt{10}}=$

$\frac{3\sqrt{70}}{\sqrt{100}}=\frac{3\sqrt{70}}{10}$

9. C: $\frac{4\sqrt{15}}{6\sqrt{6}}=\frac{4\sqrt{15}\sqrt{6}}{6\sqrt{6}\sqrt{6}}=\frac{4\sqrt{90}}{6\sqrt{36}}=$

$\frac{4\sqrt{90}}{6(6)}=\frac{4\sqrt{90}}{36}=\frac{\sqrt{90}}{9}=$

$\frac{\sqrt{9}\sqrt{10}}{9}=\frac{3\sqrt{10}}{9}=\frac{\sqrt{10}}{3}$

10. D: $\frac{15\sqrt{11}}{\sqrt{5}}=\frac{15\sqrt{11}\sqrt{5}}{\sqrt{5}\sqrt{5}}=\frac{15\sqrt{55}}{\sqrt{25}}=$

$\frac{15\sqrt{55}}{5}=\frac{3\sqrt{55}}{1}=3\sqrt{55}$

11. C: $\frac{4\sqrt{3}}{\sqrt{2}}+\frac{2\sqrt{3}}{\sqrt{2}}=\frac{6\sqrt{3}}{\sqrt{2}}=\frac{6\sqrt{3}\sqrt{2}}{\sqrt{2}\sqrt{2}}=$

$\frac{6\sqrt{6}}{\sqrt{4}}=\frac{6\sqrt{6}}{2}=\frac{3\sqrt{6}}{1}=3\sqrt{6}$

12. A: $\frac{7}{\sqrt{5}}+\frac{3}{\sqrt{2}}=\frac{7\sqrt{5}}{\sqrt{5}\sqrt{5}}+\frac{3\sqrt{2}}{\sqrt{2}\sqrt{2}}=$

$\frac{7\sqrt{5}}{\sqrt{25}}+\frac{3\sqrt{2}}{\sqrt{4}}=\frac{7\sqrt{5}}{5}+\frac{3\sqrt{2}}{2}=$

$\frac{7\sqrt{5}(2)}{5(2)}+\frac{3\sqrt{2}(5)}{2(5)}=$

$\frac{14\sqrt{5}}{10}+\frac{15\sqrt{2}}{10}=\frac{14\sqrt{5}+15\sqrt{2}}{10}$

13. D: $\frac{8\sqrt{6}}{\sqrt{3}}-\frac{5\sqrt{3}}{\sqrt{2}}=\frac{8\sqrt{6}\sqrt{3}}{\sqrt{3}\sqrt{3}}-\frac{5\sqrt{3}\sqrt{2}}{\sqrt{2}\sqrt{2}}=$

$\frac{8\sqrt{18}}{\sqrt{9}}-\frac{5\sqrt{6}}{\sqrt{4}}=\frac{8\sqrt{18}}{3}-\frac{5\sqrt{6}}{2}=$

$\frac{8\sqrt{9}\sqrt{2}}{3}-\frac{5\sqrt{6}}{2}=\frac{8(3)\sqrt{2}}{3}-\frac{5\sqrt{6}}{2}=$

$\frac{8\sqrt{2}}{1}-\frac{5\sqrt{6}}{2}=\frac{8\sqrt{2}(2)}{1(2)}-\frac{5\sqrt{6}}{2}=$

$\frac{16\sqrt{2}}{2}-\frac{5\sqrt{6}}{2}=\frac{16\sqrt{2}-5\sqrt{6}}{2}$

14. E: $\frac{6\sqrt{11}}{\sqrt{3}}-\frac{2\sqrt{5}}{\sqrt{2}}=\frac{6\sqrt{11}\sqrt{3}}{\sqrt{3}\sqrt{3}}-\frac{2\sqrt{5}\sqrt{2}}{\sqrt{2}\sqrt{2}}=$

$\frac{6\sqrt{33}}{\sqrt{9}}-\frac{2\sqrt{10}}{\sqrt{4}}=\frac{6\sqrt{33}}{3}-\frac{2\sqrt{10}}{2}=$

$\frac{2\sqrt{33}}{1}-\frac{\sqrt{10}}{1}=2\sqrt{33}-\sqrt{10}$

15. E: $\frac{2\sqrt{2}}{\sqrt{8}}+\frac{7\sqrt{3}}{\sqrt{3}}=\frac{2}{\sqrt{4}}+\frac{7}{1}=$

$\frac{2}{2}+7=1+7=8$

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