## Test 15

1. A: triangles
2. B: altitude
3. A: slant height
4. D: prism
5. A: cylinder:
   $V = Bh = \pi r^2 h \approx$
   $(3.14)(1.5^2)(4) = 28.26$
   cone:
   $V = \frac{1}{3}Bh = \frac{1}{3}\pi r^2 h \approx$
   $\frac{1}{3}(3.14)(1.5^2)(4) = 9.42$
6. D: not enough information, because we do not know the heights
7. A: sphere:
   $V = \frac{4}{3}\pi r^3 \approx \frac{4}{3}(3.14)(4^3) \approx 267.95$
   cone: $V = \frac{1}{3}Bh = \frac{1}{3}\pi r^2 h \approx$
   $\frac{1}{3}(3.14)(4^2)(4) \approx 66.99$
8. C: same, because the spheres are the same size
9. B: cylinder: $V = Bh = (4)(10) = 40$
   rectangular solid:
   $V = Bh = (10)(8) = 80$
   $80 > 40$
10. E: none of the above
    correct formula is $V = \frac{4}{3}\pi r^3$
11. B: $V = \frac{1}{3}Bh$
12. A: $V = \frac{1}{3}Bh = \frac{1}{3}(6)(6)(10) =$
    $120 \text{ in}^3$
13. E: $V = \frac{1}{3}Bh = \frac{1}{3}\pi r^2 h \approx$
    $\frac{1}{3}(3.14)(5^2)(12) = 314 \text{ in}^3$
14. A: $V = Bh = \frac{1}{2}(3)(4)(6) = 36 \text{ ft}^3$
15. B: $V = \frac{4}{3}\pi r^3 \approx \frac{4}{3}(3.14)(6^3) =$
    $904.32 \text{ m}^3$

## Test 16

1. D: 6 faces
2. C: 5 faces
3. B: 4 faces
4. C: two circles and the rectangle formed by "unrolling" the side
5. D: square units
6. A: $6(7)(7) = 294 \text{ in}^2$
7. A: SA =
   $2(12)(14) + 2(12)(8) + 2(8)(14) =$
   $336 + 192 + 224 = 752 \text{ ft}^2$
8. A: $SA = 2\pi r^2 + 2\pi rh \approx$
   $(2)(3.14)(5^2) + (2)(3.14)(5)(10) =$
   $157 + 314 = 471 \text{ m}^2$
9. D: $SA = 4\ \frac{1}{2}(6)(9)\ + (6)(6) =$
   $108 + 36 = 144 \text{ units}^2$
10. B: $SA = 2(3)(4) + 2(4)(6) + 2(3)(6) =$
    $24 + 48 + 36 = 108 \text{ units}^2$
11. B: Since the square base has an area of $100 \text{ ft}^2$, it must be $\sqrt{100}$ or 10 ft on a side.
    $SA = 4\ \frac{1}{2}(10)(20)\ + (10)(10) =$
    $400 + 100 = 500 \text{ ft}^2$
12. A: $SA = 4\ \frac{1}{2}(20)(30)\ + (20)(20) =$
    $1{,}200 + 400 = 1{,}600 \text{ m}^2$
13. D: $SA = 2(1)(3) + 2(1)(4) + 2(3)(4) =$
    $6 + 8 + 24 = 38 \text{ ft}^2$

14. C: $SA = 2\pi r^2 + 2\pi rh \approx$
$2(3.14)(3^2) + 2(3.14)(3)(5) =$
$56.52 + 94.2 = 150.72 \text{ cm}^2$

15. E: "roof": $SA = 2(7)(5) = 70 \text{ m}^2$
triangles:
$SA = 2\frac{1}{2}(6)(4) = 24 \text{ m}^2$
sides:
$SA = 2(2)(7) + 2(2)(6) = 52 \text{ m}^2$
bottom: $SA = (6)(7) = 42 \text{ m}^2$
total:
$SA = 70 + 24 + 52 + 42 = 188 \text{ m}^2$

## Test 17

1. C: a whole number
2. B: 6
3. B: $\sqrt{RS}$
4. E: $\sqrt{R} + \sqrt{S} = \sqrt{R} + \sqrt{S}$:
cannot be simplified
5. B: $(5\sqrt{X})(6\sqrt{Y}) = 30\sqrt{XY}$
6. D: $10\sqrt{3}$
7. A: $(3\sqrt{5})(3\sqrt{5}) = 9\sqrt{25} = 9(5) = 45$
8. B: $\sqrt{45} = \sqrt{9}\sqrt{5} = 3\sqrt{5}$
9. C: $\sqrt{24} = \sqrt{4}\sqrt{6} = 2\sqrt{6}$
10. E: $\sqrt{42} = \sqrt{42}$:
cannot be simplified
11. A: $\frac{24\sqrt{18}}{6\sqrt{9}} = \frac{24\sqrt{2}}{6} = \frac{4\sqrt{2}}{1} = 4\sqrt{2}$
12. C: $\frac{15\sqrt{8}}{5\sqrt{2}} = \frac{15\sqrt{4}}{5} = \frac{3\sqrt{4}}{1} =$
$3\sqrt{4} = 3(2) = 6$
13. E: cannot be simplified
14. B: $2\sqrt{3} + 3\sqrt{3} + 6\sqrt{3} =$
$(2+3+6)\sqrt{3} = 11\sqrt{3}$
15. D: $(5\sqrt{3})(4\sqrt{2}) = 20\sqrt{6}$

## Test 18

1. D: $a^2 + b^2 = c^2$
2. C: the triangle is a right triangle
3. D: $3^2 + 2^2 = H^2$
$9 + 4 = H^2$
$13 = H^2$
$\sqrt{13} = H \approx 3.61$
Of the answers given,
4 is closest.
4. C: $A^2 + B^2 = H^2$
$\sqrt{A^2 + B^2} = \sqrt{H^2}$
$\sqrt{A^2 + B^2} = H$
5. B: $3^2 + 7^2 = H^2$
$9 + 49 = H^2$
$58 = H^2$
$\sqrt{58} = H$
6. E: $4^2 + 6^2 = H^2$
$16 + 36 = H^2$
$52 = H^2$
$\sqrt{52} = H = \sqrt{4}\sqrt{13} = 2\sqrt{13}$
7. C: $6^2 + 8^2 = 10^2$
$36 + 64 = 100$
$100 = 100$: true
Since the Pythagorean
theorem applies to this
triangle, it is a right triangle.
8. B: $5^2 + 9^2 = 12^2$
$25 + 81 = 144$
$106 = 144$: not true
Since the Pythagorean
theorem does not apply to
this triangle, it is not a
right triangle.
9. C: 90°
10. A: hypotenuse