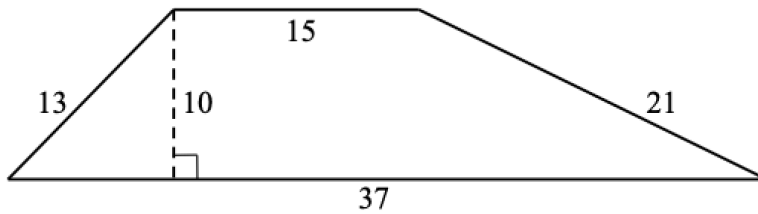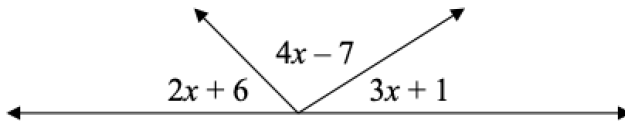1)   Find the perimeter and area of the following trapezoid:

2)   Find x and the size of all three angles in the following drawing:

3)   Find the sum of the interior angles, the sum of the exterior angles, the size of one interior angle, and the size of one exterior angle in a regular decagon.

4)   If the side of a square is 80 feet, how far, exactly, is it from <u>one</u> corner to the opposite corner?

5)   If $l\|m$ and $k\|n$, find the size of the four angles and find the values of $x, y,$ and a in the following drawing:
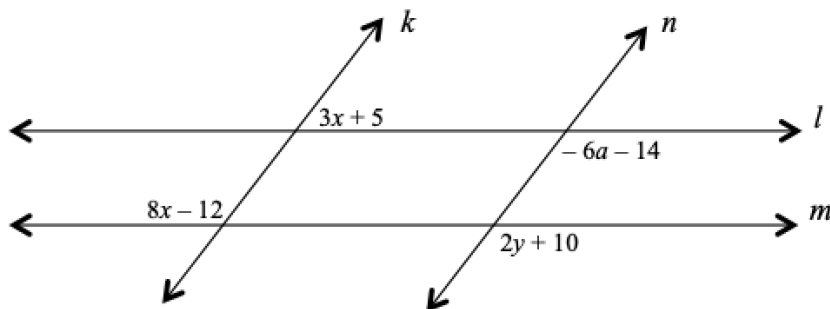
6)   For a regular octagon, find, exactly, its apothem, its area, and the areas of the inscribed and circumscribed circles if its radius is 10 and the length of one of its sides is

7)   For a regular hexagon, find, exactly, its apothem, its side length, its area, and the areas of the inscribed and circumscribed circles if the radius is 8.

8)   Find the circumference and area of a circle with a diameter of 17. Find the answers
        exactly AND approximately by approximating π as 3.14.

9)   The official flag of Abiland, the fictional country that Abigail rules, is a rectangle
        and is shown below. Find the perimeter, in inches, and the area, in square inches, of
        the green, purple, yellow, blue, and red sections and the perimeter, in inches, and
   the area, in square inches, of the entire flag.
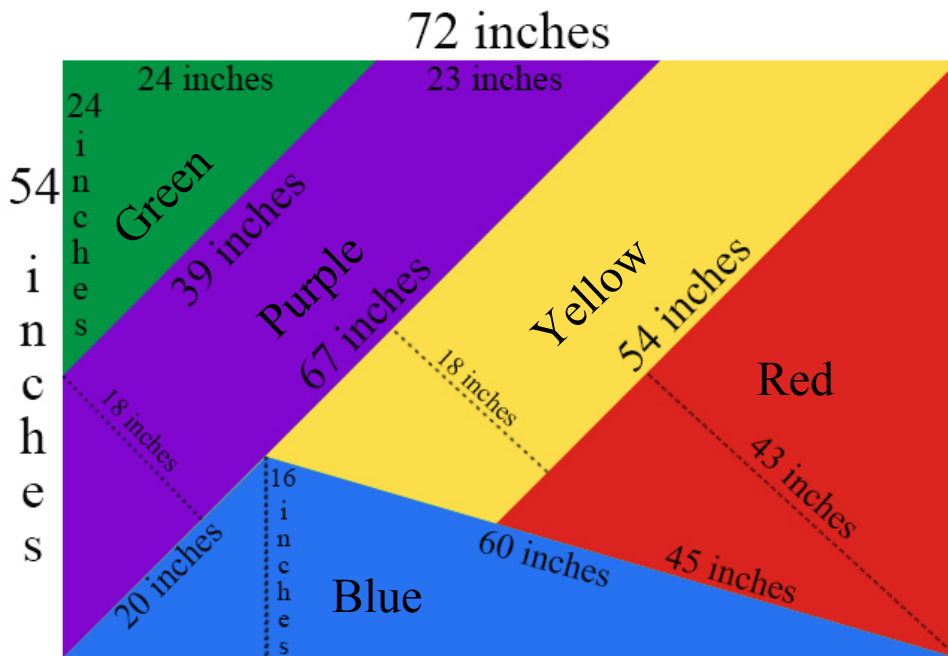
10)   A rocket scientist designs a new type of spacecraft, and in an attempt to convince
        NASA to actually build it, she creates a scale model that is a fraction of the size of
        the actual rocket but similar in shape. All of the dimensions of the small model are
        exactly proportional to those of the full-sized spacecraft. The diameter of the model
        rocket is 4 inches and the height of the model is 22 inches. If the diameter of the
        actual spacecraft is 14 feet, how tall, in feet, is the actual rocket?
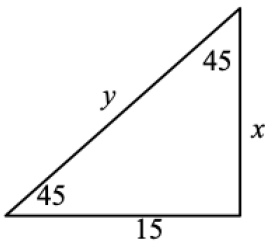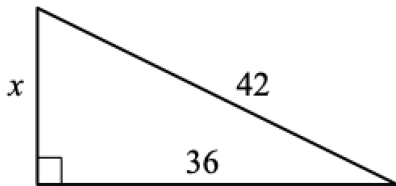
11)   Find x and y in the following triangle.

34   60

30   y

x
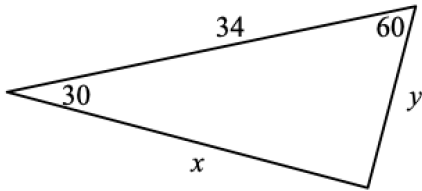
12)   Find x and y in the following triangle.

45

y

x

45
15

13)   If the following triangle is a right triangle, find x exactly:

x 42

36

14)   Plot the points A (-6,-1), B (2,3), C (6,-2), and D (-4,-7) all on the same graph. Find the midpoint, distance, and slope between points A and B, B and C, C and D, and D and A. Use this information to determine the exact geometric shape of ABCD.

15)   Find (exactly AND approximately) the surface area and volume for a sphere with a diameter of 7.

16)   Find (exactly AND approximately) the surface area and volume for a right cylinder with a radius of 9 and a height of 13.

17)   Find (exactly AND approximately) the surface area and volume for a right cone with a diameter of 16 and a height of 15.
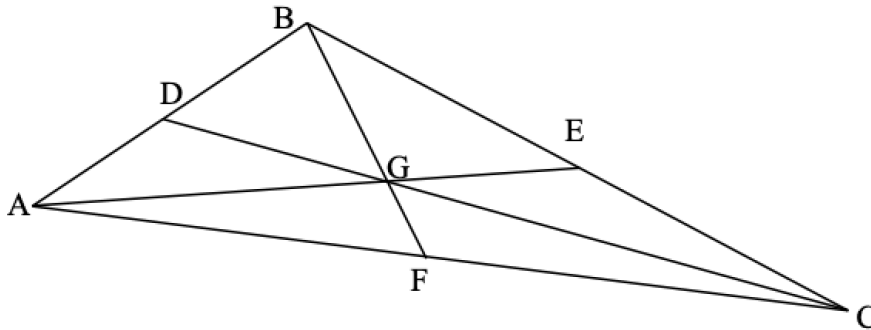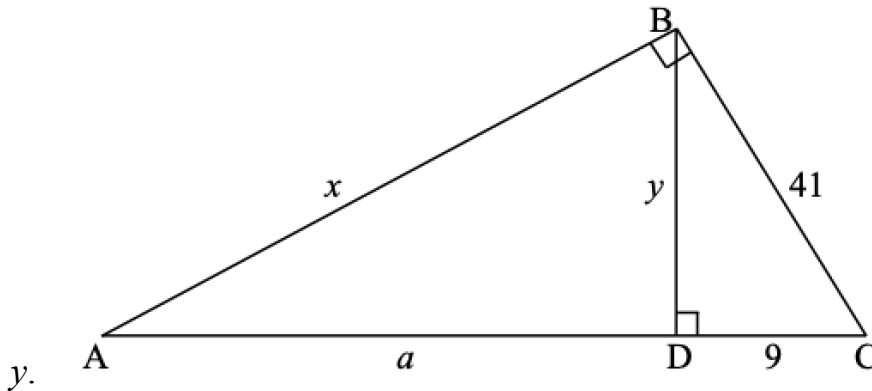
18)   AE, BF, and CD are all medians of triangle ABC, and they all intersect at point G.
       If the area of polygon ABEGF = 44, what is the area of triangle ABF? If AC = 14,
       BF = 9, and GE = 4, what is the perimeter of triangle AGF?

19)   If BD is an altitude of right triangle ABC and DC = 9 while BC = 41, find a, x, and

y.

20)   Find the surface area and volume for a right, regular, triangular prism with a height
       of 17 and an apothem of 8.

EXTRA CREDIT

21)   Find the surface area and volume for a right, regular, octagonal prism with a height
       of 11, a radius of 17, and a perimeter around its base of 128.

22)   Find the surface area and volume for a right, regular, hexagonal prism with a height
       of 19 and a diameter of a circle circumscribed in its base of 24.

Geometry
Answer Key - Practice Test #1

1) The perimeter is 86 and the area is 260.

2) $x = 20$ 46°, 73°, 61°

3) 1,440°, 360°, 144°, 36°

4) $80\sqrt{2}$ feet

5) 56° and 124°, $x = 17, y = 57, a = -23$

6) Apothem $= 6$, Area $= 384$, Inscribed $= 36\pi$, Circumscribed $= 100\pi$

7) Apothem $= 4\sqrt{3}$, Side Length $= 8$, Area $= 96\sqrt{3}$, Inscribed $= 48\pi$,
Circumscribed $= 64\pi$

8) Circumference $= 17\pi$ exactly and 53.38 approximately

Area $= \dfrac{289}{4}\pi$ exactly and 226.865 approximately

9) Green: Perimeter $= 87$ inches   Area $= 288$ square inches
Purple: Perimeter $= 159$ inches   Area $= 954$ square inches
Yellow: Perimeter $= 141$ inches   Area $= 909$ square inches
Blue: Perimeter $= 152$ inches   Area $= 576$ square inches
Red: Perimeter $= 153$ inches   Area $= 1,161$ square inches
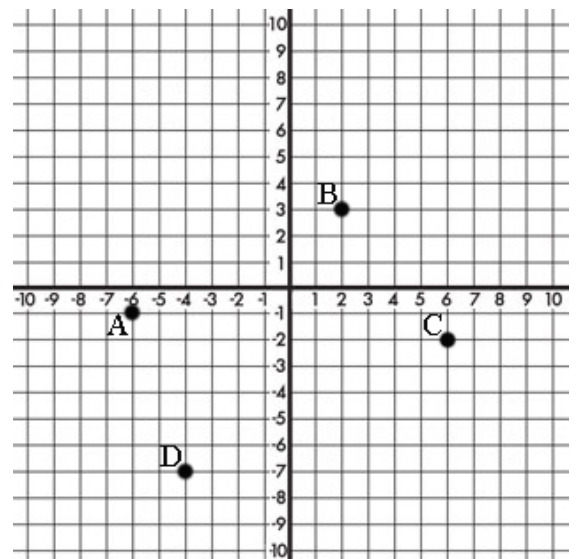Flag: Perimeter $= 252$ inches   Area $= 3,888$ square inches

10) 77 feet

11) $x = 17\sqrt{3},\ y = 17$

12) $x = 15,\ y = 15\sqrt{2}$

13) $x = 6\sqrt{13}$

14) AB: Midpoint $= (-2,1)$, Distance $= 4\sqrt{5}$, Slope $= \dfrac{1}{2}$

BC: Midpoint $= (4, \dfrac{1}{2})$, Distance $= \sqrt{41}$ Slope $= \dfrac{-5}{4}$

CD: Midpoint $=(1, \frac{-9}{2})$, Distance $= 5\sqrt{5}$, Slope $= \frac{1}{2}$

DA: Midpoint $=(-5,-4)$, Distance $= 2\sqrt{10}$ Slope $= \frac{-3}{1}$

ABCD is a trapezoid

15)
Exact surface area $= 49\pi$ Exact volume $= \frac{343}{6}\pi$

Approximate surface area ≈ 153.86 Approximate volume $\approx 179.50\overline{3}$

16)
Exact surface area $= 396\pi$ Exact volume $= 1,053\pi$

Approximate surface area $\approx 1,243.44$ Approximate volume $\approx 3,306.42$

17)
Exact surface area $= 200\pi$ Exact volume $= 320\pi$

Approximate surface area ≈ 628 Approximate volume $\approx 1,004.8$

18) The area of triangle ABF $= 33$ and the perimeter of triangle AGF $= 18$

19) $a = \frac{1600}{9}$, $x = \frac{1640}{9}$, $y = 40$

20) Surface Area $= 1,200\sqrt{3}$ Volume $= 3,264\sqrt{3}$

Extra Credit

21) Surface Area $= 3,328$ Volume $= 10,560$

22) Surface Area $= 432\sqrt{3} + 1,368$ Volume $= 4,104\sqrt{3}$