1. **Answer: 100 units**

   Use Pythagorean Theorem to find the hypotenuse: $a^2 + b^2 = c^2$
   28^2+96^2=c^2
   784+9216=c^2
   10,000=c^2
   C= 100 units

2. **Answer: 13°**

   The sum of the interior angles for a triangle is 180.

   $38° + 14° − 2° = 50°$; $180° − 50° = 130°$; $130° = (3x + 7x)$; $130° = 10x$; $x = 130°$

   $/ 10 = 13°$

3. **Answer: 259,200**

   Sum of all interior angles for regular polygon: $(180n-360)°$

   Sum of all exterior angles for regular polygon is $360°$

   Sum of interior angles for a regular hexagon: (180(6)-360)= 720
   720*360= 259,200

4. **Answer: 4,000,000π square miles**

   Surface Area of a Sphere Formula: $4πr^2$; plug in the radius value 4 (π) $(1,000)^2$;

   leave answer in terms of π to get $4,000,000π^2$ miles.

5. **Answer: 50π**

   Find the arc length for the side of the cake where frosting is missing.
   Formula for arc length: $l=m/360*C$
    l= length of arc, m= measure of arc, c=circumference

   Circumference= 2πr. 12(2) π= 24π

   Plug in variables: l=(125/360)*24π= 3000π/360

   Simplify: 25π/3

Find the area of the region that needs to be re-frosted by multiplying the arc length by the height of the cake.
(25π/3) × (6)= 150π/3= 50π

6. **Answer: 384cm**

   Divide the total area of the house by the number of square rooms to find the area of one room.
   960/15= 64, then find the side length of each room by taking square root: $\sqrt{64}$=8

   Find the possible dimensions of the house: 3 × 5, and 15 × 1

   Find the perimeter of the house with dimensions 3×5: 3(8)+3(8)+5(8)+5(8)= 128

   Find the perimeter of the house with dimensions 15×1: 15(8)+15(8)+1(8)+1(8)= 256
   Add the perimeters of both houses: 128+256=384

7. **Answer: 64/17**
   In the figure: AD/AC=AC/AB
   Use Pythagorean Theorem to find AC: x^2+15^2=17^2; x^2+225= 289
   x^2= 64; x=8; AC=8
   AD/8=8/17
   Cross multiply and get: 17x=64
   x=64/17

8. **Answer: 14,406.32 cm³ or 360158/25**

   Volume of a cylinder: πr^2(h); r is the radius, and h is the height

   Volume of a cone: 1/3πr^2(h); r is the radius, and h is the height
   Subtract the volume of the cone from the volume of the cylinder.
   Plug in values: $(π10^2(46)) − (1/3π2^2(9))$

   $((3.14)(100)(46)) − ((1/3)(3.14)(4)(9))$

   $(14,444) − (37.68)$= 14,406.32 cm^3

9. **Answer:** 9

   Radius of circumscribed circle about any angle:
    R= product of the sides/4(area of the triangle)
   Find the area of the triangle using Heron's formula: $\sqrt{s(s − a)(s − b)(s − c)}$
   Semi perimeter= perimeter/2= (15+4+13)/2=16
   $\sqrt{16(16 − 15)(16 − 4)(16 − 13)}$= 24
   R=(15*4*13)/4(24)= (780)/(96)= 8.125 which rounds up to 9

10. Answer: $\frac{105\sqrt{3}+52}{4}$ or $13 + \frac{105\sqrt{3}}{4}$

Use law of cosines to find side c: c^2=a^2+b^2-2ab(cos C)

Plug in values: c^2=7^2+15^2-2(7)(15)(cos 60°)

c^2= 49+225-210(1/2)

c^2= 49+225-105= 169; c=13

Area of any triangle: 1/2abs(sin C)

$(1/2)(7)(15)(\sin 60°)= \frac{105\sqrt{3}}{4}$

Add side c and the area together: $13+ \frac{105\sqrt{3}}{4}= \frac{105\sqrt{3}+52}{4}$