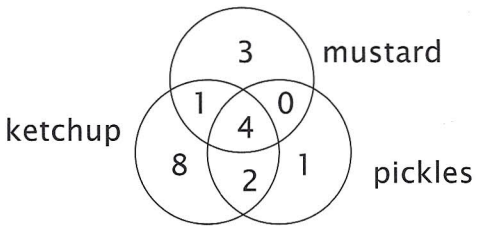
7. $K \cup M - P = 12$
8. $K \cap M \cap P = 4$

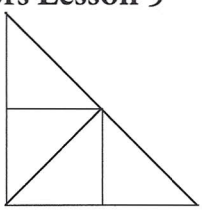


9. $3x4 = 4 \times 3$
   commutative property
   is true for multiplication
10. $9 - 6 \neq 6 - 9$
    commutative property
    is false for subtraction
11. $(2+1)+5 = 2+(1+5)$
    associative property
    is true for addition
12. $2 \div 8 \neq 8 \div 2$
    commutative property
    is false for division

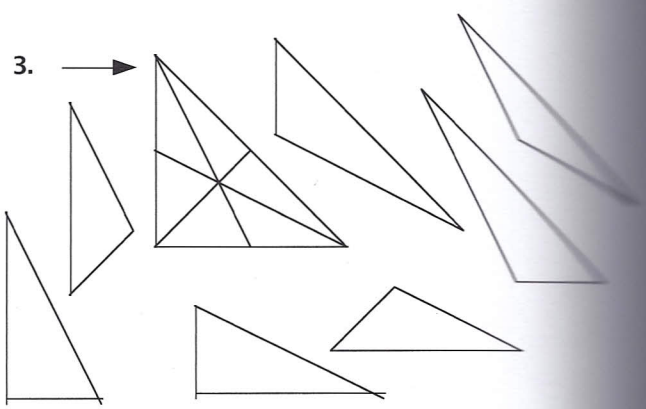
Honors Lesson 4

1. 45°
2. NNW
3. NNE
4. no, he should have corrected 67.5°
5. $5X - 6 = 2X + 18$
   $5X - 2X = 18 + 6$
   $3X = 24$
   $X = 8$
6. $2C + 10 = 43 - C$
   $3C = 33$
   $C = 11$
7. $(\$1.75 + D) + D = \$3.25$
   $2D + \$1.75 = \$3.25$
   $2D = \$1.50$
   $D = \$.75$
   $\$.75 + \$1.75 = \$2.50$
   Drink is \$.75
   Sandwich is \$2.50
8. let X = number of Isaac's customers
   2X = number of Aaron's customers
   $X + 2X = 105$
   $3X = 105$
   $X = 35$
   $2X = 70$
   Isaac has 35 customers
   Aaron has 70 customers
9. $X + 2X = 18$
   $3X = 18$
   X = 6 feet; 2X = 12 feet
10. $A + (A + 20) = 144$
    $2A + 20 = 144$
    $2A = 124$
    A = 62 apples in one box
    62 + 20 = 82 apples in the other box

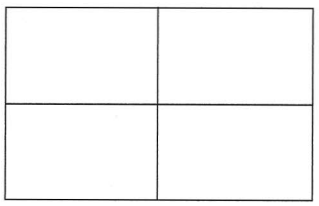
Honors Lesson 5

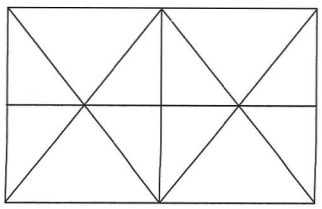
1. 

2. 4 small
   2 medium
   1 large
   7 total

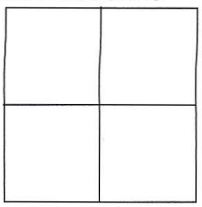
3. 

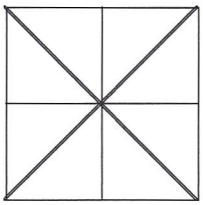
4. 1 started with
   2 that are half of first triangle
   6 small
   7 overlapping (you may need to draw these separately to be able to count each one. See Above.)
   16 total

5. 

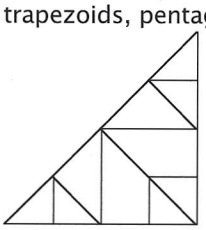
6. 

Honors Lesson 6

1. 

2. 

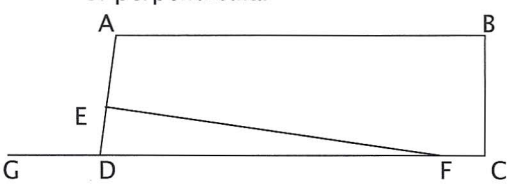
3. triangles, squares, trapezoids, pentagons



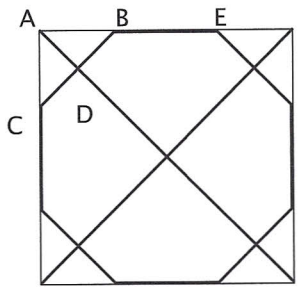
4. answers will vary
5. $P = 6X + .5(6)X$
   $P = 6X + 3X$
   $P = 9X$
6. $P = 9X$
   $P = 9(8)$
   $P = \$72$

Honors Lesson 7

1. Extend all segments
   $\overline{AD} \parallel \overline{XY} \parallel \overline{BC}$
   $\overline{AB} \parallel \overline{RS} \parallel \overline{DC}$
   corresponding angles are congruent
2. Yes; extend $\overline{DF}$ and $\overline{BC}$ these 2 line segements are cut by transversal $\overline{AB}$ corresponding $\angle$'s ADF and ABE are both 90°
3. extend $\overline{DC}$ to include point G
   $m\angle A = 100°$
   since $\overline{AB}$ and $\overline{DE}$ are parallel,
   $m\angle GDA$ is 100°.
   $m\angle EDF$ is 80°, since it is supplementary to $\angle GDA$.
   $m\angle DEF = 90°$ - definition of perpendicular



4. CAB = 90° (given)
BAD = 45° – definition of bisector
ADB = 90° - definition of perpendicular
ABD = 45° - from information given
DBE = 135° - supplementary angles
all other corners work out the same way.



Honors Lesson 8

1. Look at the drawing below to see how the angles are labeled for easy reference.
a and d are 25°
definition of bisector

p and o are 20°
definition of bisector

i and j are 45°
definition of bisector

Now look at triangle AEB. Its angles must add up to 180°. We know the measure of a and that of ABC. Add these together, and subtract the result from the total 180° that are in a triangle:
$180\text{-}(25+90) = 180-115 = 65°$
$l = 65°$

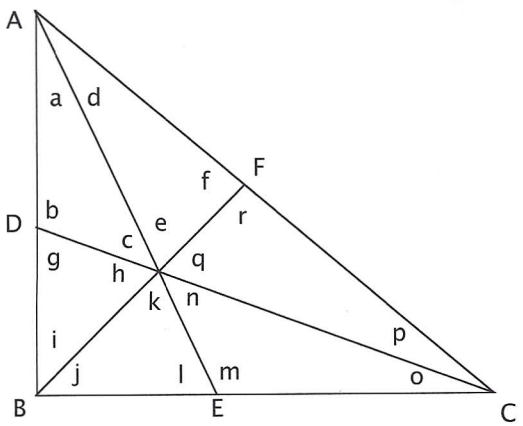
Using similar reasoning, and looking at triangles AEC, BFC, ABF, DBC and ADC, we can find the following:
m=115°

r = 95°	f = 85°
b = 110°	g = 70°

Now we know two angles from each of the smaller triangles. Armed with this knowledge, and the fact that there are 180° in a triangle, we can find the remaining angles:

c=45°	e = 70°
q = 65°	n = 45°
k = 70°	h = 65°

You can also use what you know about vertical angles and complementary angles to find some of the angles.



2. b, d, j and k are all 90° — definition of perpendicular
$c = 180° - (a+b)$ — 180° in a triangle
$c=180° - (60+90) = 30°$
$l = 180° - (K+m)$ — 180° in a triangle

$l = 180° - (90 + 30) = 60°$

$l + i = 90°$ Angle EGC is 90° because of the definition of perpendicular.

$60 + i = 90°$

$i = 30°$

$h = 180° - (i + j)$ 180° in a triangle

$h = 180° - (30 + 90)$

$h = 60°$

$f + h = 180°$ Angle BEC is 180°

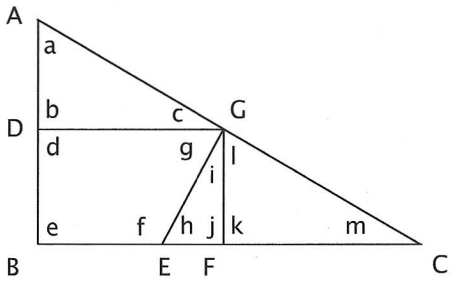
$f + 60 = 180°$

$f = 120°$

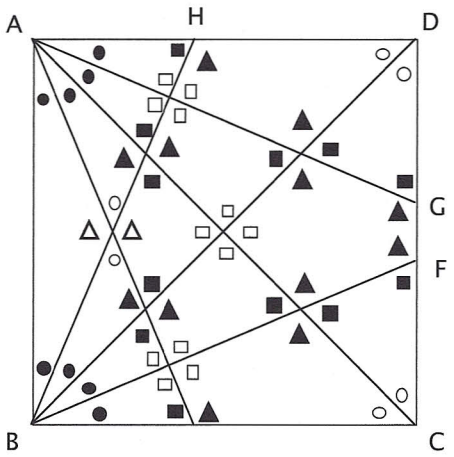
$c + g = 90°$ Angle AGE is 90° because of the definition of perpendicular.

$30 + g = 90°$

$g = 60°$



3. Use the same process for this one. Remember that you can also use what you know about vertical angles or complementary and supplementary angles as a shortcut.



● = 22.5°
○ = 45°
■ = 67.5°
□ = 90°
▲ = 112.5°
△ = 135°

Honors Lesson 9

1. large rectangle:

$15.5 \times 13 = 201.5 \text{ ft}^2$

small rectangle:

$3 \times 5 = 15 \text{ ft}^2$

large trapezoid:

$(9)\ \frac{10+4}{2} = (9)\ \frac{14}{2} = (9)(7) = 63 \text{ ft}^2$

small trapezoid:

$(2)\ \frac{4+8}{2} = (2)\ \frac{12}{2} = (2)(6) = 12 \text{ ft}^2$

total:

$201.5 + 15 + 63 + 12 = 291.5 \text{ ft}^2$

2. It is necessary sometimes to add lines to the drawing to make it clearer. In figure 1a, dotted lines have been added to show how one end of the figure has been broken up. Since we know that the long measurement is 6.40 in and the space between the dotted lined is 80 in, we can see that the heights of the trapezoids add up to 5.60 in. Since we have been told that the top and bottom are the same, each trapezoid must have a height of 2.80 in.

Area of each trapezoid:

$(2.8)\ \frac{1.27+.80}{2} = (2.8)\ \frac{2.07}{2} =$

$2.898\ in^2$

Since there are four trapezoids in all, we multiply by 4:

$2.898 \times 4 = 11.592\ in^2$

Rectangular center portion:

$80\ in \times 15\ in = 12\ in^2$

Total:

$12 + 11.592 = 23.592\ in^2$

3. area = (a)(b) or ab (see figure 2)

4. area = (2a)(2b) or 4ab (see figure 3)

5. area = (na)(nb) or n^2ab (see figure 4)

6. area = $n^2ab = (5^2)(4)(5) = (25)(20) =$ $500\ ft^2$

7. first triangle: $a = \frac{1}{2}xy$

second triangle: $a = \frac{1}{2}(2x)(2y) = 2xy$

4 times $\frac{1}{2} = 2$, so new area is four times as great.

8. first square: $(x)(x) = x^2$

second square: $(x^2)(x^2) = x^4$

figure 1a

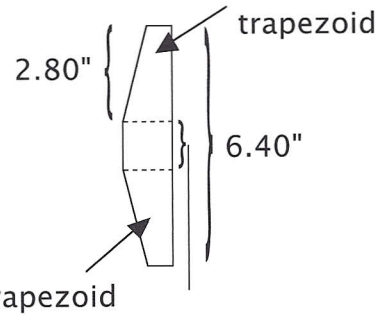
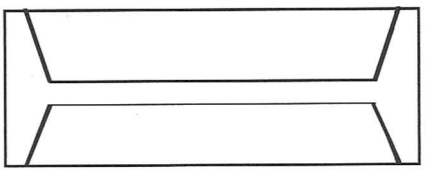


figure 1b shows a different way of finding the area



Area of large rectangle $15 \times 6.4 = 96\ in^2$

One trapezoid	long base 15 - $(2 \times 8) = 13.4\ in^2$ short base 15 - $(2 \times 1.27) =$ $12.46\ in^2$ height $(6.4 - .8) \div 2 = 2.8\ in^2$ Area of one trapezoid $= 36.204\ in^2$
Both trapezoids	$2 \times 36.204 =$ $72.408\ in^2$
Area of figure	$96 - 72.408 =$ $23.592\ in^2$

figure 2

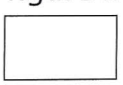


figure 3

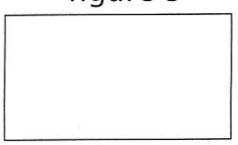


figure 4

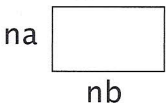


figure 5

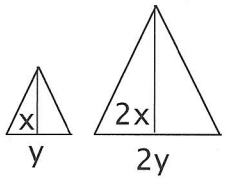
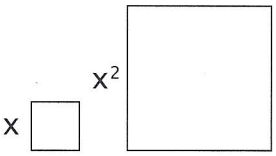
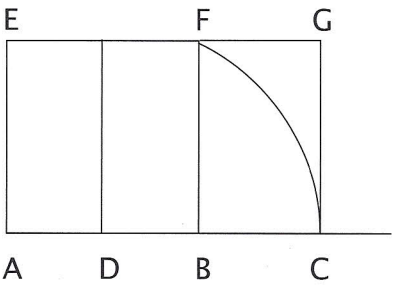


figure 6



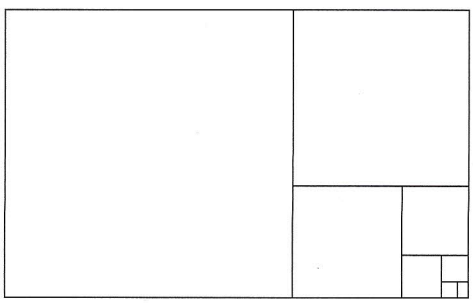
Honors Lesson 10

1-4.



5. your answer should be close to 0.61803.
6. See illustration above. The ratio should be close to what you got in #5.

7-8.



Honors Lesson 11

1.

	green, buttons	green, zipper	red, zipper	blue, buttons
Chris	yes	x	x	x
Douglas	x	yes	x	x
Ashley	x	x	x	yes
Naomi	x	x	yes	x

2.

	planning games	refresh-ments	place for party	birthday guest
Sam	x	x	yes	x
Jason	x	x	x	yes
Shane	yes	x	x	x
Troy	x	yes	x	x

3.

	train	boat	airplane	car
Janelle	yes	x	x	x
Walter	x	x	x	yes
Julie	x	yes	x	x
Jared	x	x	yes	x

4.

	hot dog	pizza	chicken soup	tossed salad
Molly	yes	x	x	x
Tina	x	x	x	yes
Logan	x	x	yes	x
Sam	x	yes	x	x

5. Answers will vary.

Honors Lesson 12

1.