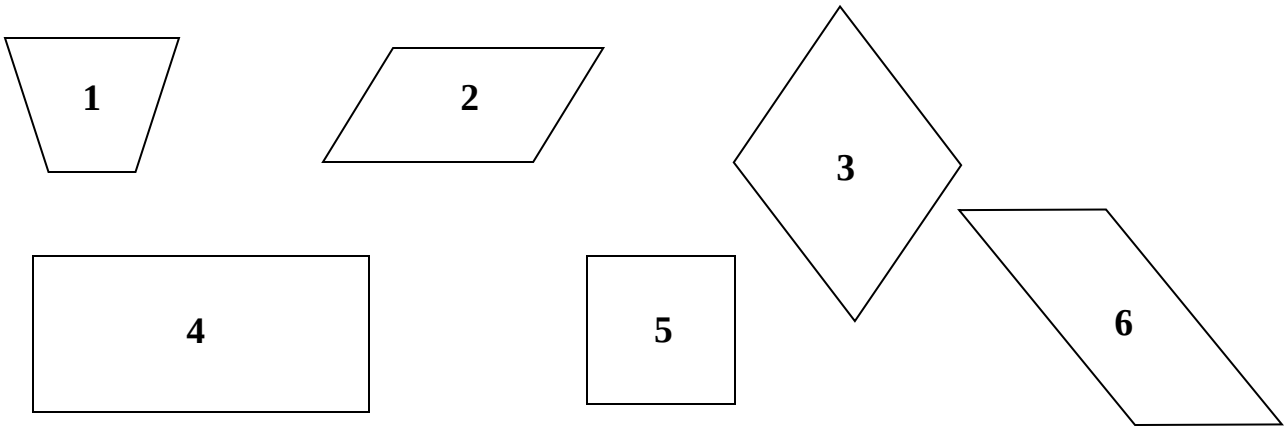
Math 1351 Review #3(answers)

1. Use the given shapes to answer the following questions.



a) Which shapes are squares?

5

b) Which shapes are rectangles?

4,5

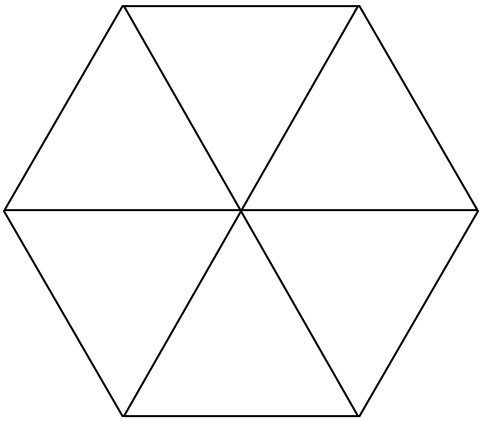
c) Which shapes are rhombi?

3,5

d) Which shapes are parallelograms?

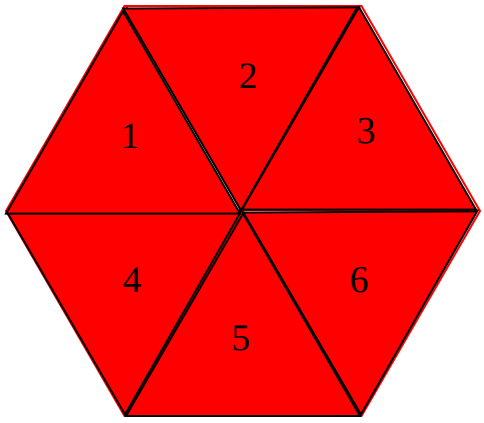
2,3,4,5,6

2. Use the given figure to answer the following questions.



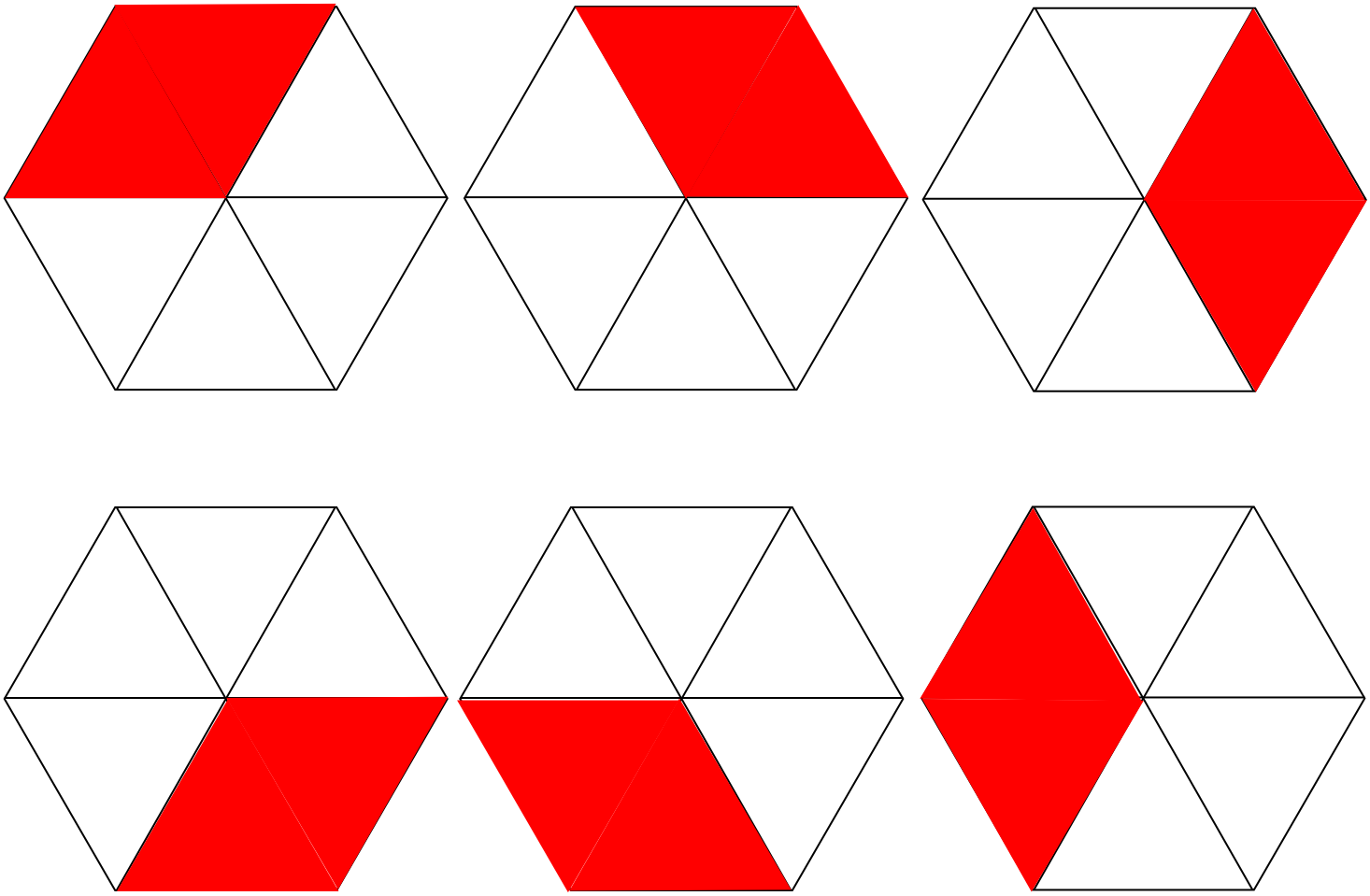
a) How many triangles are in the figure?

6



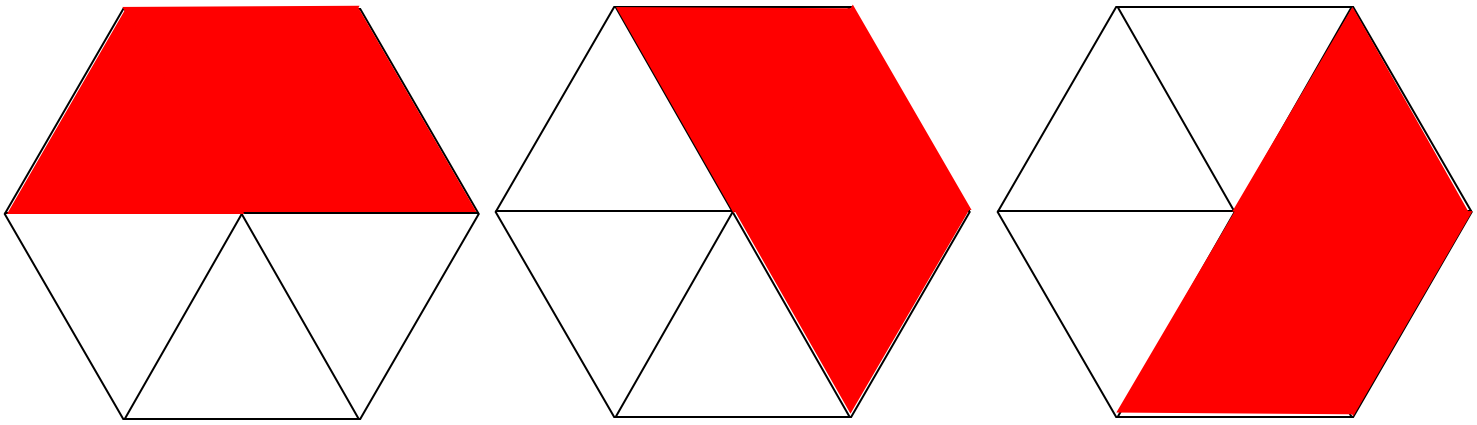
b) How many parallelograms are in the figure?

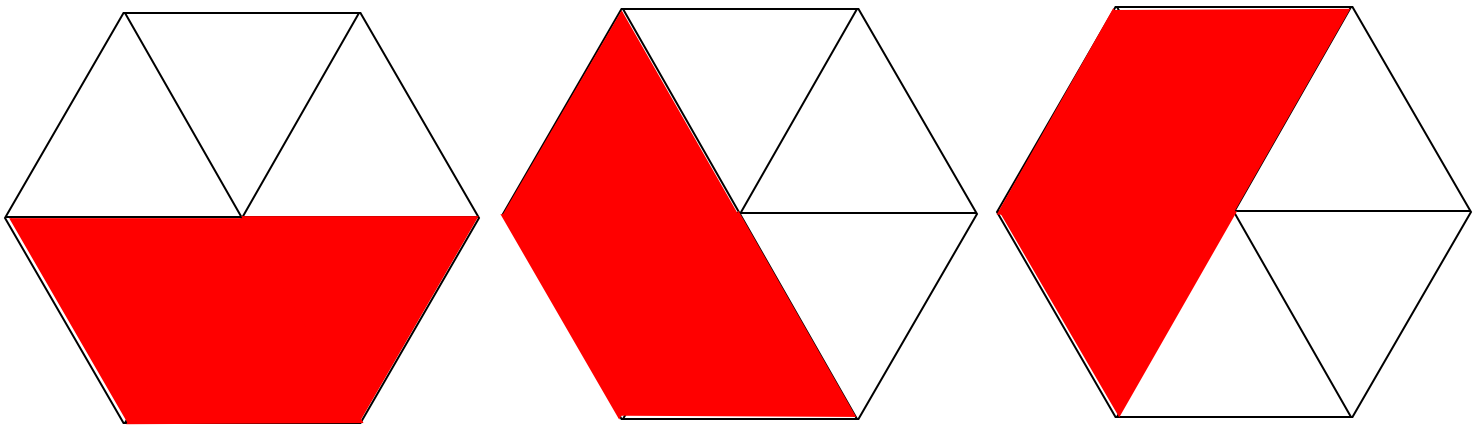
6



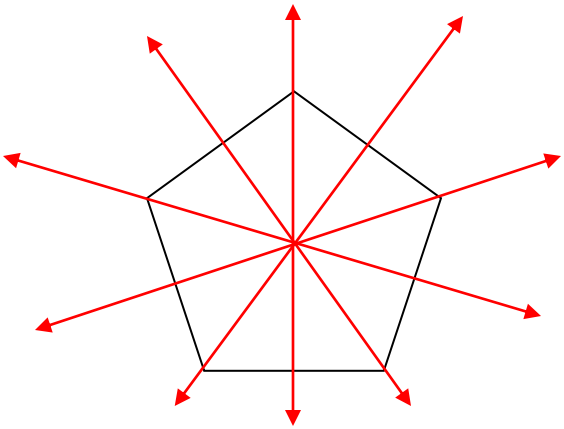
c) How many trapezoids are in the figure?

6





3. Use the given regular pentagon.

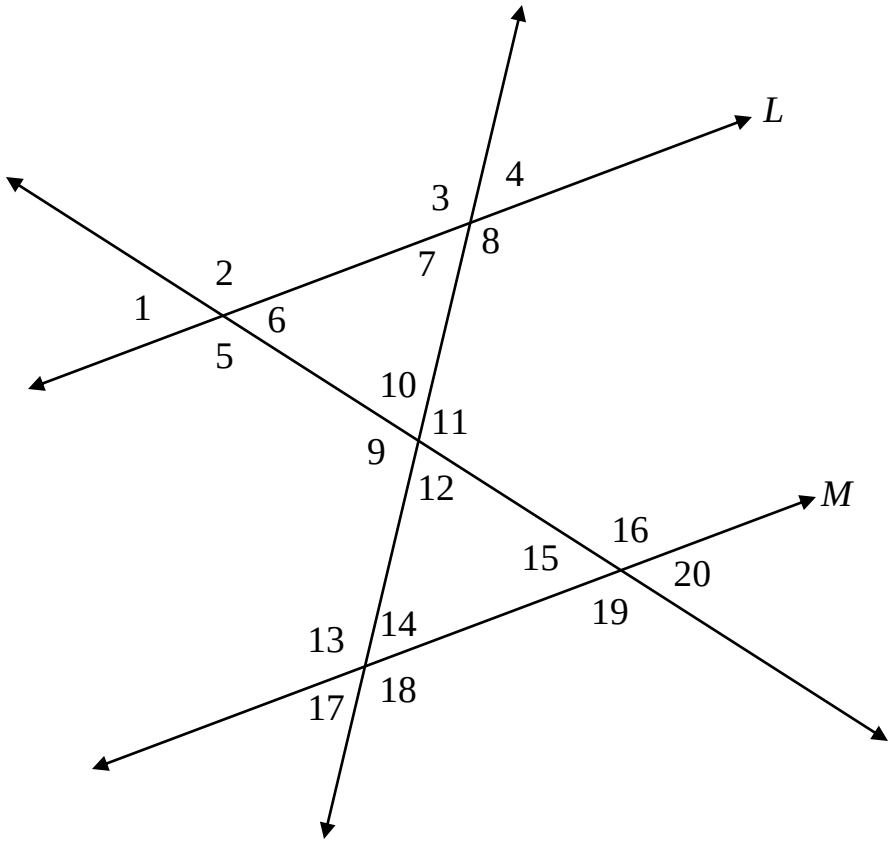


a) Draw the lines of reflection symmetry for the regular pentagon.

b) The figure has rotation symmetry. What is the smallest angle of rotation about its center so that the figure will exactly match its original position?

72° or $\frac{1}{5}$ of a full rotation

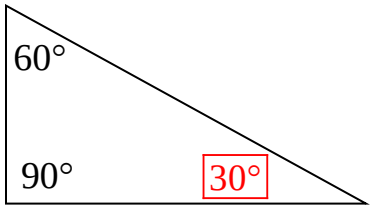
4. Determine the measures of the numbered angles if $m(\angle 4)=80°$, $m(\angle 16)=125°$, and L is parallel to M.



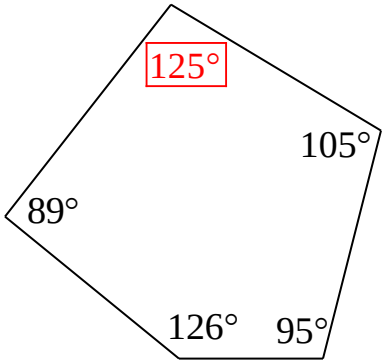
$m(\angle 1)=55°$	$m(\angle 11)=135°$
$m(\angle 2)=125°$	$m(\angle 12)=45°$
$m(\angle 3)=100°$	$m(\angle 13)=100°$
$m(\angle 5)=125°$	$m(\angle 14)=80°$
$m(\angle 6)=55°$	$m(\angle 15)=55°$
$m(\angle 7)=80°$	$m(\angle 17)=80°$
$m(\angle 8)=100°$	$m(\angle 18)=100°$
$m(\angle 9)=135°$	$m(\angle 19)=125°$
$m(\angle 10)=45°$	$m(\angle 20)=55°$

5. Find the missing angle measure in the following figures.

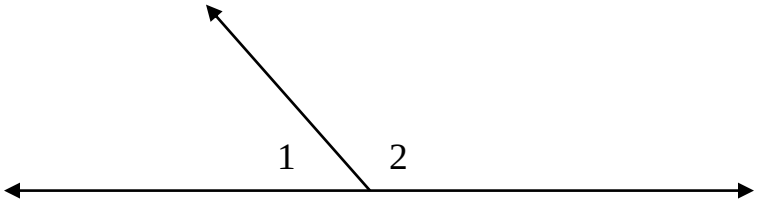
a)



b)



6. In the following figure, the measure of $\angle 1$ is $9°$ less than half the measure of $\angle 2$. Determine the measures of both angles.



$$\tfrac{1}{2}m(\angle 2) - 9 + m(\angle 2) = 180$$

$$\tfrac{3}{2}m(\angle 2) = 189$$

$$m(\angle 2) = 189 \cdot \tfrac{2}{3}$$

$$\boxed{m(\angle 2) = 126°, m(\angle 1) = 54°}$$

7. For the following regular n-gons, give the measure of a vertex angle, a central angle, and an exterior angle.

a) 12-gon

Vertex angle	$180° - 30° = \boxed{150°}$
Central angle	$\frac{360°}{12} = \boxed{30°}$
Exterior angle	$\boxed{30°}$

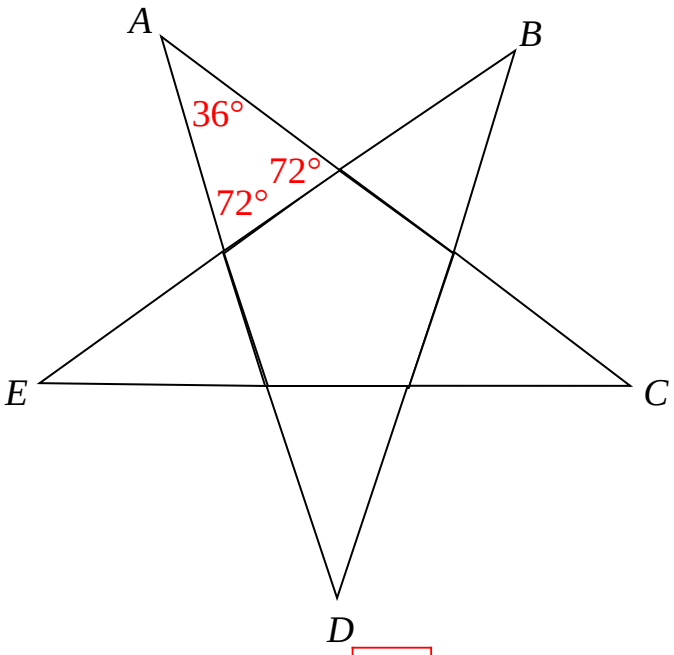
b) 16-gon

Vertex angle	$180° - 22\tfrac{1}{2}° = \boxed{157\tfrac{1}{2}°}$
Central angle	$\frac{360°}{16} = \boxed{22\tfrac{1}{2}°}$
Exterior angle	$\boxed{22\tfrac{1}{2}°}$

c) 20-gon

Vertex angle	$180° - 18° = \boxed{162°}$
Central angle	$\frac{360°}{20} = \boxed{18°}$
Exterior angle	$\boxed{18°}$

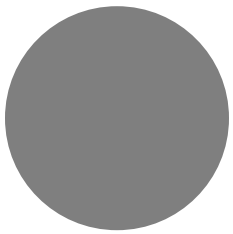
8. A star is formed by extending the sides of a regular pentagon to form five congruent isosceles triangles. What is the sum of the measures of $\angle A$, $\angle B$, $\angle C$, $\angle D$, and $\angle E$?



$5 \cdot 36° = \boxed{180°}$

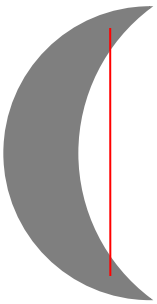
9. Determine which of the following plane regions are convex.

a)



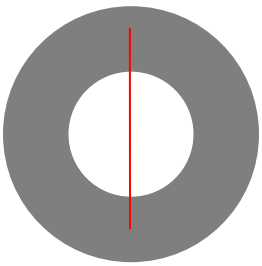
convex

b)



not convex

c)



not convex

10. Use Euler's formula to complete the following table of the number of faces, the number of vertices, and the number of edges for some convex polyhedra:

F, number of faces	V, number of vertices	E, number of edges
5	6	9
6	8	12
7	10	15