

# 1. Centroid of a Triangle: Answer Key

## RECAP 1: New Vocabulary (30 pts)

What new words (concepts) did you learn in this unit? List them below and explain what they mean.

Any 6 words of the following.

5 pts per item: 2 pts for word, 3 pts for explanation

1. *Midpoint*: the point in the middle of a segment (or a side of a triangle); the point halfway between two other points.
2. *Median*: the segment connecting a vertex with the midpoint of the opposite side of a triangle.
3. *Medicenter*: the intersection of the three medians in a triangle.
4. *Center of mass*: same as medicenter.
5. *Centroid*: same as medicenter.
6. *Conjecture*: A statement which one believes is true but has not proven yet.
7. *Theorem*: A true statement which has been proven.
8. *Definition*: A rigorous (mathematical) description of a concept.
9. *Ratio*: A fraction of something, usually lengths of two segments or some numbers.

## RECAP 2: New Theory (10 pts, 6 bonus)

What new facts did you learn about

- the medians in a triangle?
- the centroid of a triangle?

One fact per concept; 2 bon. pts per extra fact.

1. The *medians*: (5 pts, 2 bonus)
  - (a) Connect each vertex with the midpoint of the opposite side.
  - (b) Intersect in one point, called the *centroid* of the triangle.
2. The *centroid*: (5 pts, 4 bonus)
  - (a) Is the intersection of the medians in a triangle.
  - (b) Divides each median in ratio 2:1 counted from the vertex.
  - (c) Has other names, such as *medicenter* and *center of mass*.

## RECAP 3: Mathematical Logic (10 pts)

- Did we *prove* any of the new facts?
  - No. (2 pts)
- How are we so sure they are true?
  - We experimented. Tried cases. Drew pictures. Gathered evidence that they are true.

(Any of these is fine. 2 pts)
- What is the difference between a *conjecture*, a *theorem*, and a *definition*? Which needs to be proven?
  - A conjecture is what we believe is true but has not yet proven. A theorem is something that is true and proven. A definition is a description of something, and it does not need to be proven.

(2 pts for each, 6 pts total)