## Unit 1 Lesson 9: Formula for the Area of a Triangle

### 1 Bases and Heights of a Triangle (Warm up)

#### Student Task Statement

Study the examples and non-examples of **bases** and **heights** in a triangle.

* Examples: These dashed segments represent heights of the triangle.



* Non-examples: These dashed segments do *not* represent heights of the triangle.



Select **all** the statements that are true about bases and heights in a triangle.

1. Any side of a triangle can be a base.
2. There is only one possible height.
3. A height is always one of the sides of a triangle.
4. A height that corresponds to a base must be drawn at an acute angle to the base.
5. A height that corresponds to a base must be drawn at a right angle to the base.
6. Once we choose a base, there is only one segment that represents the corresponding height.
7. A segment representing a height must go through a vertex.

### 2 Finding a Formula for Area of a Triangle

#### Student Task Statement

For each triangle:

* Identify a base and a corresponding height, and record their lengths in the table.
* Find the area of the triangle and record it in the last column of the table.



| triangle | base (units) | height (units) | area (square units) |
| --- | --- | --- | --- |
| **A** |   |   |   |
| **B** |   |   |   |
| **C** |   |   |   |
| **D** |   |   |   |
| **any triangle** | $b$ | $h$ |   |

In the last row, write an expression for the area of any triangle, using $b$ and $h$.

#### Activity Synthesis



### 3 Applying the Formula for Area of Triangles

#### Student Task Statement

For each triangle, circle a base measurement that you can use to find the area of the triangle. Then, find the area of any *three* triangles. Show your reasoning.





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