

NAME: _____

G.G.42: Investigate, justify and apply theorems about geometric relationships, based on the properties of the line segment joining the midpoints of two sides of the triangle

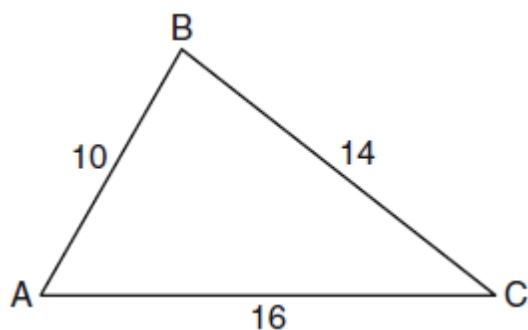
1. 010521a, P.I. G.G.42

If the midpoints of the sides of a triangle are connected, the area of the triangle formed is what part of the area of the original triangle?

[A] $\frac{3}{8}$ [B] $\frac{1}{3}$ [C] $\frac{1}{2}$ [D] $\frac{1}{4}$

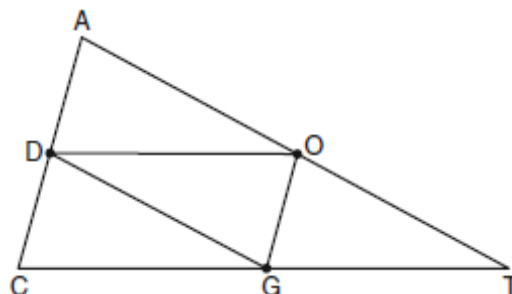
2. 060929ge, P.I. G.G.42

In the diagram of $\triangle ABC$ below, $AB = 10$, $BC = 14$, and $AC = 16$. Find the perimeter of the triangle formed by connecting the midpoints of the sides of $\triangle ABC$.



3. 080920ge, P.I. G.G.42

In the diagram below of $\triangle ACT$, D is the midpoint of \overline{AC} , O is the midpoint of \overline{AT} , and G is the midpoint of \overline{CT} .

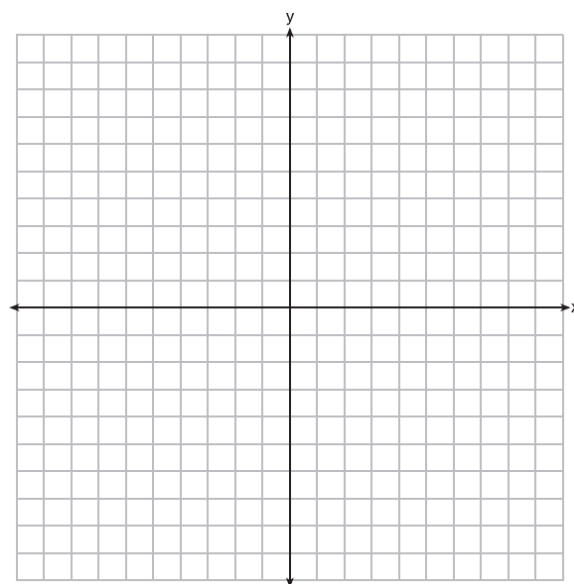


If $AC = 10$, $AT = 18$, and $CT = 22$, what is the perimeter of parallelogram $CDOG$?

[A] 25 [B] 32 [C] 21 [D] 40

4. fall0835ge, P.I. G.G.42

On the set of axes below, graph and label $\triangle DEF$ with vertices at $D(-4, -4)$, $E(-2, 2)$, and $F(8, -2)$. If G is the midpoint of \overline{EF} and H is the midpoint of \overline{DF} , state the coordinates of G and H and label each point on your graph. Explain why $\overline{GH} \parallel \overline{DE}$.



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[1] D _____

[2] 20, and appropriate work is shown.

[1] Appropriate work is shown, but one computational error is made.

or [1] Appropriate work is shown, but one conceptual error is made.

or [1] 20, but no work is shown.

[0] A zero response is completely incorrect, irrelevant, or incoherent or is a correct response that was obtained by an obviously

[2] incorrect procedure.

[3] B _____

[4] $\triangle DEF$ is graphed and labeled correctly, $G(3,0)$ and $H(2,-3)$ are stated and labeled correctly, and an appropriate explanation is written, such as the slopes are congruent or the midsegment theorem.

[3] Appropriate work is shown, but one computational, graphing, or labeling error is made.

or [3] Appropriate work is shown, and an appropriate explanation is written, but the coordinates of G and H are missing or incorrect.

or [3] $\triangle DEF$ is graphed and labeled correctly, $G(3,0)$ and $H(2,-3)$ are stated and labeled correctly, appropriate work is shown to find the slopes of \overline{GH} and \overline{ED} , but the explanation is missing or incorrect.

[2] Appropriate work is shown, but two or more computational, graphing, or labeling errors are made.

or [2] Appropriate work is shown, but one conceptual error is made.

or [2] $\triangle DEF$ is graphed and labeled correctly, $G(3,0)$ and $H(2,-3)$ are stated and labeled correctly, but no further correct work is shown.

[1] Appropriate work is shown, but one conceptual error and one computational, graphing, or labeling error are made.

or [1] The midsegment theorem is written, but no work is shown.

or [1] $G(3,0)$ and $H(2,-3)$, but no work is shown.

[0] A zero response is completely incorrect, irrelevant, or incoherent or is a correct response that was obtained by an obviously

[4] incorrect procedure.