Which three lengths could be the lengths of the sides of a triangle?

1) 10 cm, 15 cm, 24 cm

Yes

$10+15>24$ ✓

$15+24>10$ ✓

$24+10>15$ ✓

2) 12 cm, 5 cm, 17 cm

No

$12+5>17$ $\cancel{17>17}$

3) 9 cm, 22 cm, 11 cm

No

$9+22>11$ ✓

$22+11>9$ ✓

$11+9>22$ ✗

4) 21 cm, 7 cm, 6 cm

No

$7+6>21$ ✗

Two sides of a triangle have lengths 4 yd and 7 yd. Describe the possible lengths of the third side.

$4, 7, x$

$4+7>x$

$11>x$

$x<11$

$4+x>7$

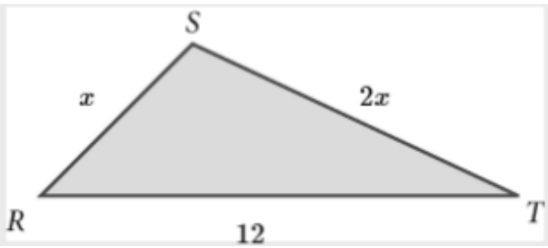
$x>3$

$x+7>4$

Always true

$3<x<11$

Use the three inequalities, which must be true based on the sides of the triangle, to write a compound inequality. Then graph the result.



$x, 2x, 12$

$x+2x>12$

$3x>12$

$x>4$

$x+12>2x$

$-x \quad -x$

$12>x$

$x<12$

$2x+12>x$

$-x \quad -x$

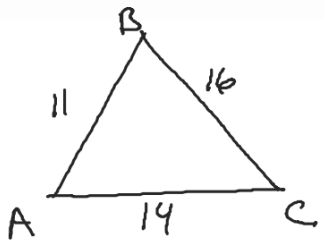
$x+12>0$

$x>-12$

Always true

$4<x<12$

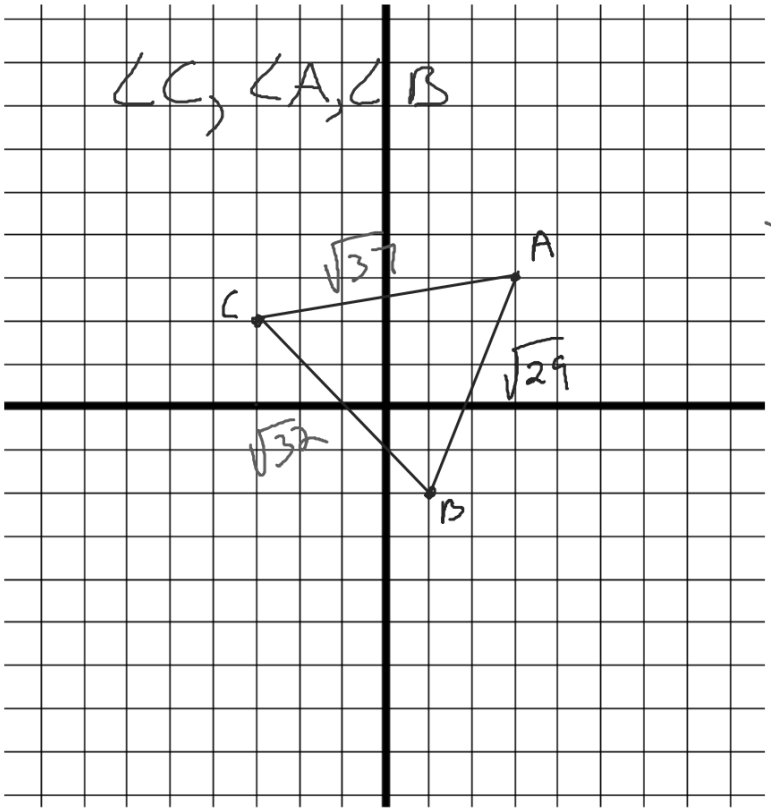
If AB = 11, BC = 16, and CA = 14, list the angles of $\triangle ABC$ in order from smallest to largest.



$\angle C, \angle B, \angle A$

List the angles of triangle ABC from smallest to largest.

A(3,3), B(1, -2), and C(-3, 2)



$$d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$$

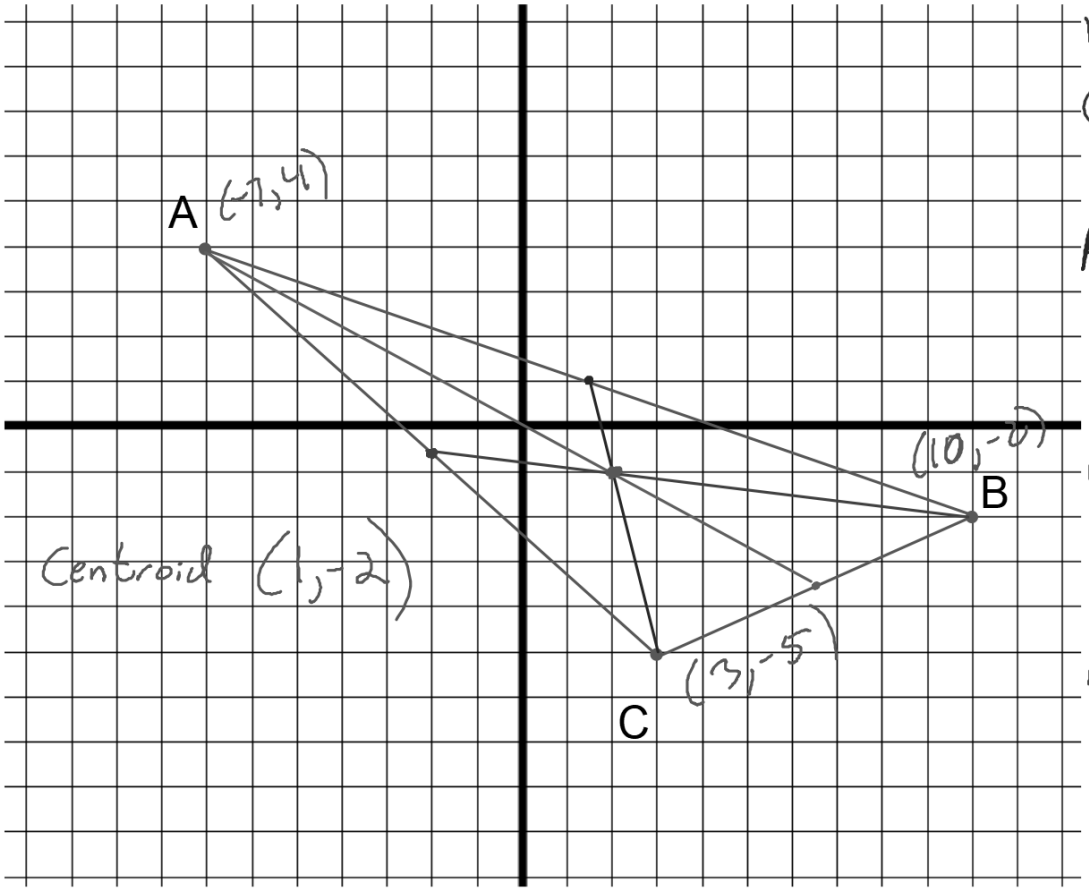
$$AB = \sqrt{(1-3)^2 + (-2-3)^2}$$
$$= \sqrt{(-2)^2 + (-5)^2}$$
$$= \sqrt{4+25} = \sqrt{29}$$

$$BC = \sqrt{(-3-1)^2 + (2-(-2))^2}$$
$$= \sqrt{(-4)^2 + (4)^2}$$
$$= \sqrt{16+16} = \sqrt{32}$$

$$AC = \sqrt{(-3-3)^2 + (2-3)^2}$$
$$= \sqrt{(-6)^2 + (-1)^2}$$
$$= \sqrt{36+1} = \sqrt{37}$$

From a vertex to opposite side midpoint

Draw all 3 medians for the triangle below and place a point at the centroid of the triangle. Give the centriod.



Midpoint

$\left(\frac{x_1+x_2}{2}, \frac{y_1+y_2}{2}\right)$

AB

$\left(\frac{-7+10}{2}, \frac{4+(-2)}{2}\right)$

$\left(\frac{3}{2}, 1\right) = (1.5, 1)$

BC

$\left(\frac{10+3}{2}, \frac{-2+(-5)}{2}\right)$

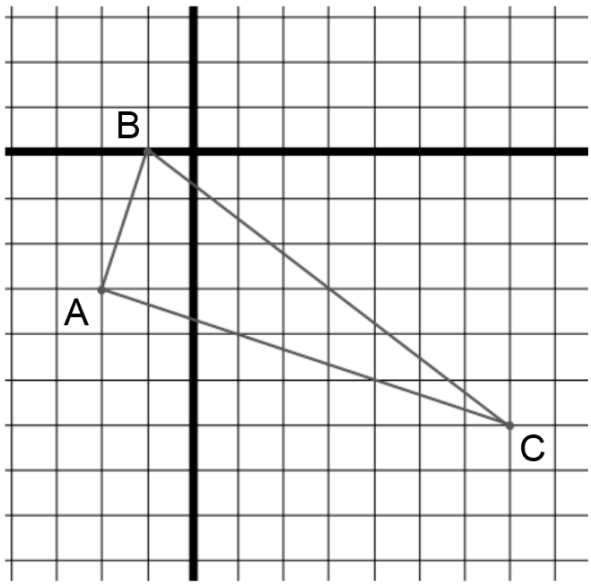
$\left(\frac{13}{2}, \frac{-7}{2}\right) = (6.5, -3.5)$

AC

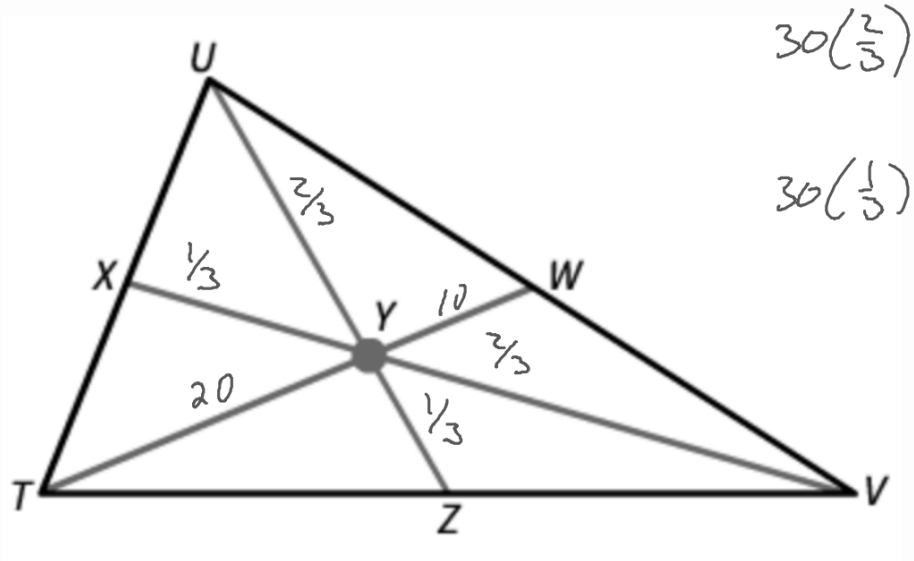
$\left(\frac{-7+3}{2}, \frac{4+(-5)}{2}\right)$

$\left(-2, -\frac{1}{2}\right)$

Draw the three perpendicular bisectors for the triangle below and place a point a the circumcenter. Give the points for the circumcenter.



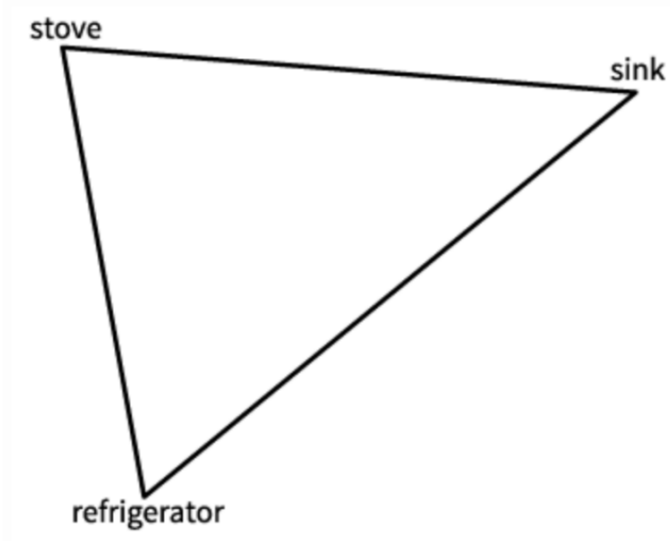
In ΔTUV, Y is the centroid. If $TW = 30$, what is TY?



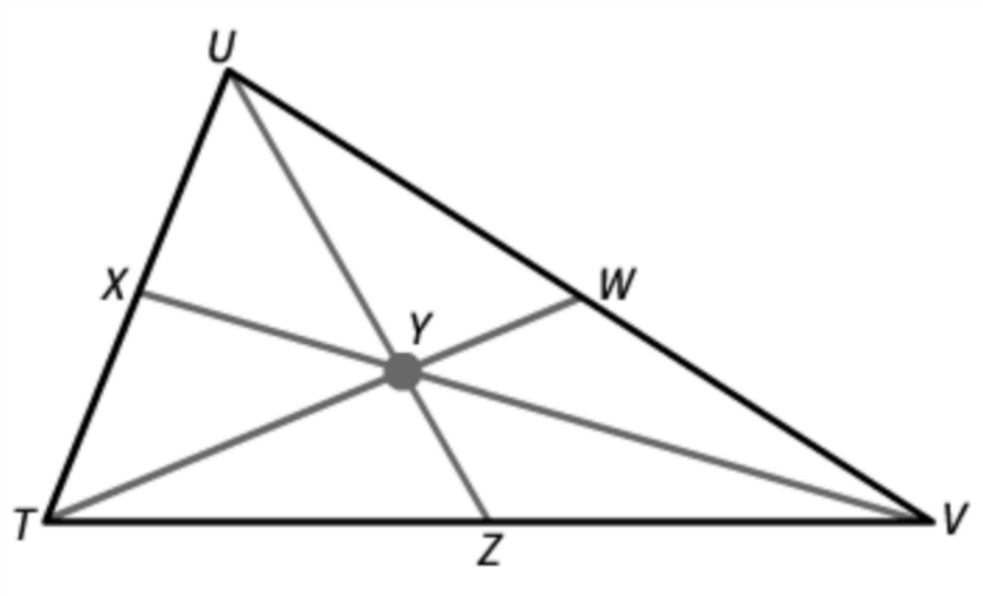
$30\left(\frac{2}{3}\right) = 20$

$30\left(\frac{1}{3}\right) = 10$

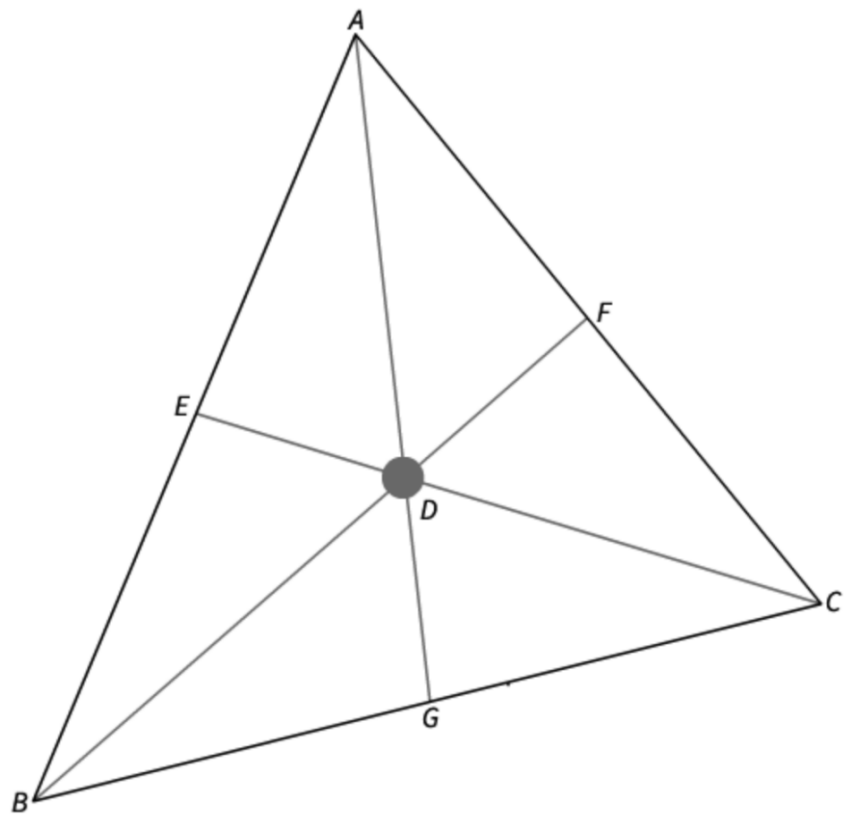
In the diagram, which center describes the point equidistant to the stove, the refrigerator, and the sink?

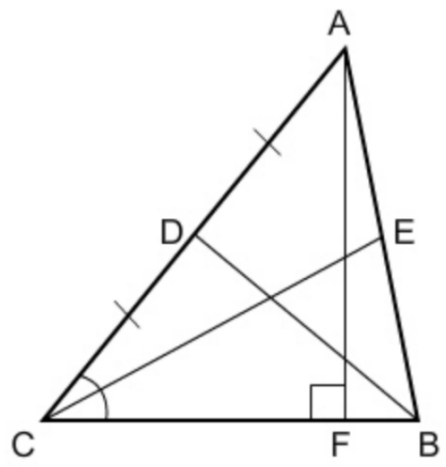


In ΔTUV, Y is the centroid. If $YW = 30$, what is TY?



D is the centroid of ΔABC and $DG = 6$ ft. Find AD.





Name a median for △ABC.

In triangle CDE identify the following:

A Median

An Altitude

A Perpendicular Bisector

An Angle Bisector