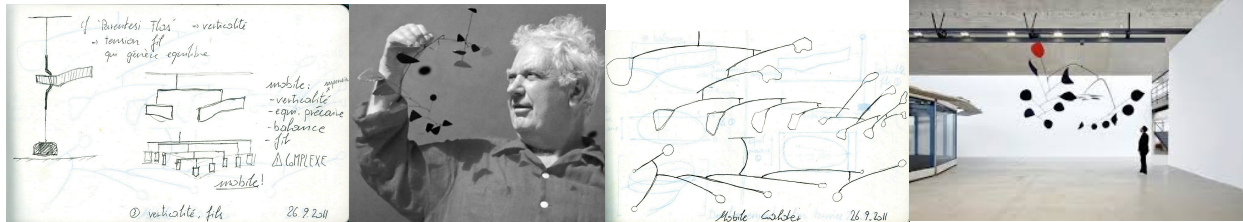


Name: Gavin

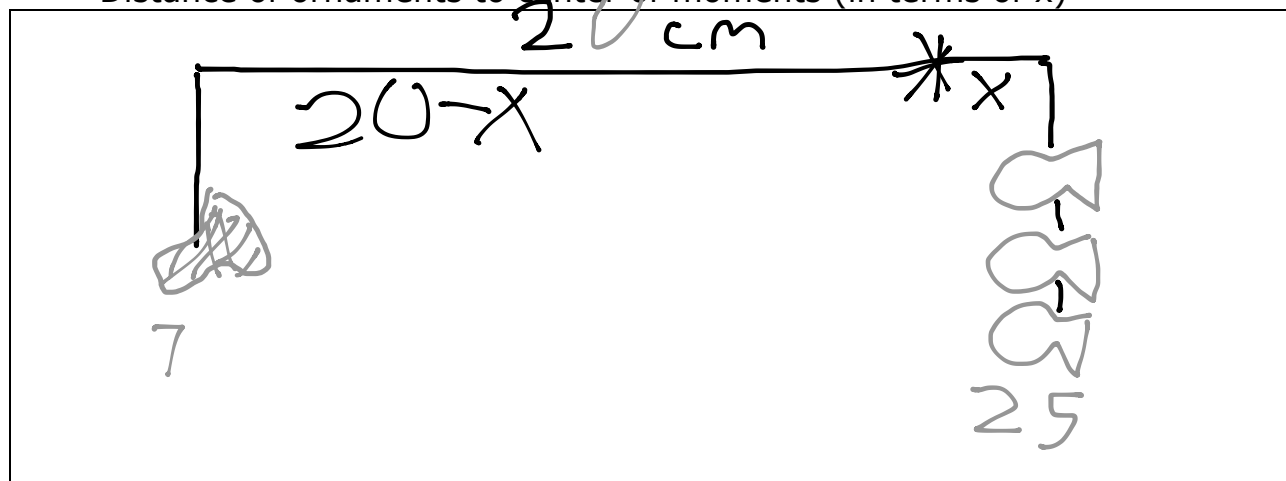
Long Term LT: I can analyze and solve linear equations and pairs of simultaneous linear equations (8.EE.7-8). This means I can...(1) solve systems of two linear equations algebraically using the distributive property and collecting like terms and (2) solve systems of two linear equations graphically using the point of intersection of their graphs.

Alexander Calder-Artist & Engineer of Kinetic Sculpture (the mobile)



TASK 1: CREATE A SCHEMATIC OF YOUR MOBILE INCLUDING

- Length of rod (cm)
- Sketch of ornaments
- Weight of ornaments (g)
- Predicted location for center of moments to create balance (*)
- Distance of ornaments to center of moments (in terms of x)



Green moment's equation =

$$Y = 7(20 - x)$$

$$Y = 140 - 7x$$

$$Y = -7x + 140$$

Purple moment's equation =

$$Y = 25x$$

TASK 7 SOLVE FOR DELICATE BALANCE: GRAPHICALLY

Green moment's equation $y=mx+b$

$$Y = -7x + 140$$

Purple moment's equation $y=mx+b$

$$Y = 25x$$

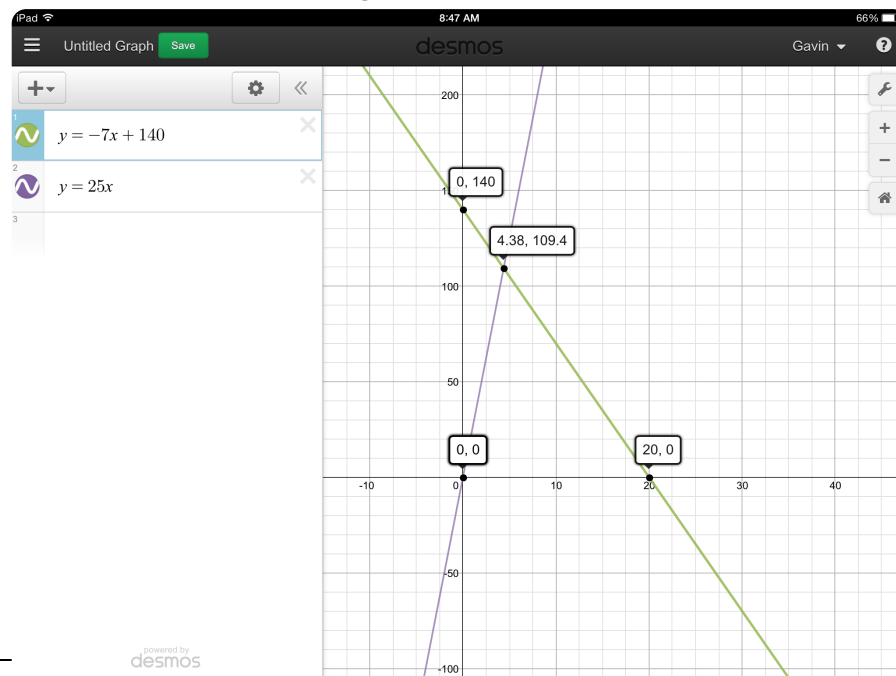
At what distance (x) from the right end of the rod will the center of moments be located to create equal moments?

4.38

What will be the magnitude of moments (y) when balance is achieved?

109.4

Insert screen shot showing this solution.



TASK 3: EXPLAIN $Y=MX+B$

| Variable | Meaning | Explanation in context of Alexander Calder Mobiles |
|----------|-------------|---|
| Y | Output | The strength of the twisting force |
| M | Slope | -7 is the slope. This means the twisting force decreases by 7gcm every time the center moves 1cm left |
| X | Input | X= distance from the right end of rod |
| B | y-intercept | B= 140 When x=0 the twisting force = 140 |

| Variable | Meaning | Explanation in context of Alexander Calder Mobiles |
|----------|-------------|--|
| Y | Output | The strength of the twisting force |
| M | Slope | 25 is the slope. This means the twisting force increases by 25gcm every time the center moves 1cm left |
| X | Input | X= distance from the right end of rod |
| B | y-intercept | B= — When x=0 the twisting force = 0gcm |

TASK 4 SOLVE FOR DELICATE BALANCE: ALGEBRAICALLY

| | |
|---|--|
| Green moment's equation $y=mx+b$ $y = -7x + 140$ | Purple moment's equation $y=mx+b$ $y = 25x$ |
| <p>At what distance from the right end of the rod will the center of moments be located to create equal moments?</p> $\begin{aligned} -7x + 140 &= 25x \\ +7x & \\ 140 &= 32x \\ \hline 32x &= 140 \\ x &= 4.375 \end{aligned}$ | |
| Solve for the magnitude of the green moment (y) when $x = \underline{4.375}$ $-7x(4.375) + 140$ 106.25 | Solve for the magnitude of the purple moment (y) when $x = \underline{4.375}$ $25x(4.375)$ 109.375 |