Problem of the Week
Problem B and Solution
It's All Relative

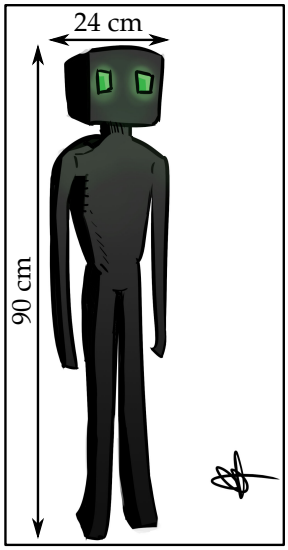
Problem

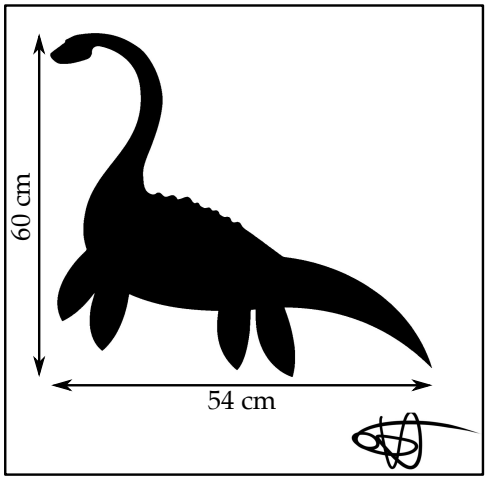
Jacob has a picture on his wall of an enderman Minecraft^{TM} character and another of the Loch Ness Monster. The dimensions of each are shown below. He wants to make a smaller scale drawing of each of them. Jacob uses a scale of $1 : 6$ to draw his enderman. He uses a different scale to draw the Loch Ness Monster so that it is twice as tall as his drawing of the enderman.

a) How tall is Jacob's drawing of the enderman?

b) What scale did Jacob use to draw the Loch Ness Monster?

c) How wide is Jacob's drawing of the Loch Ness Monster?





Solution

a) The original picture of the enderman is 90 cm tall, and Jacob is using a scale of $1 : 6$ to make his smaller drawing. Thus, Jacob's drawing is $90 \div 6 = 15$ cm tall.

b) Since Jacob's drawing of the Loch Ness Monster is twice as tall as his drawing of the enderman, that tells us his drawing of the Loch Ness Monster is $2 \times 15 = 30$ cm tall. The original picture of the Loch Ness Monster is 60 cm tall. So the scale is $30 : 60$, which is equivalent to $1 : 2$.

c) The original picture of the Loch Ness Monster is 54 cm wide, and Jacob is using a scale of $1 : 2$ to make his smaller drawing. Thus, Jacob's drawing is $54 \div 2 = 27$ cm wide.