

Name: _____

Date: _____

Casting Shadows

Kyle and Stan are two fourth graders that are curious about their heights. They know that Stan is 4 feet tall, but they aren't sure how tall Kyle is. When Stan is out in the sun, his shadow is 2 feet long. Kyle can also see that his own shadow is 3 feet long.

Stan has an idea; what if they use similar triangles? Stan says Kyle can determine his height by comparing the triangles that the two of them make with their shadows.



I know Kyle and I both stand at right angles when compared to the ground. I also know that the sun is hitting us both at the same angle. Since these two pairs of angles are the same, the triangles must be similar.

Therefore,

$$\frac{4}{2} = \frac{x}{3}$$

Stan's ratio Kyle's ratio

cross-multiply



$$\begin{aligned} 4 \cdot 3 &= 2 \cdot x \\ 12 &= 2x \\ \div 2 &\div 2 \\ 6 &= x \end{aligned}$$

Kyle is 6 feet tall.

