

Math



Shadows



Math Shadows

Indirect Measurement 2

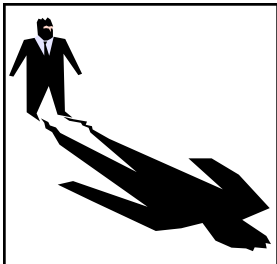


Name _____
Height _____
Shadow _____

Student		Hoop
<u>height</u>	=	<u>height</u>
shadow		shadow
_____	=	_____ X _____
Height of Hoop (x) = _____		

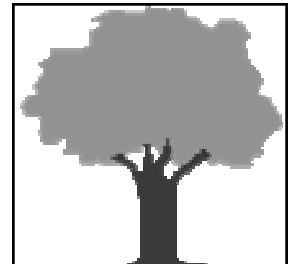


Basketball Hoop
Height = x
Shadow = _____

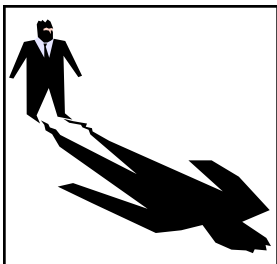


Name _____
Height _____
Shadow _____

Student		Tree
<u>height</u>	=	<u>height</u>
shadow		shadow
_____	=	_____ X _____
Height of Tree (x) = _____		

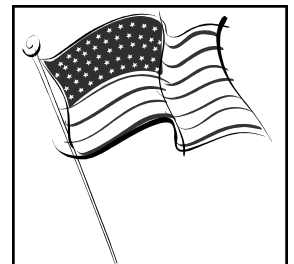


Tree
Height = x
Shadow = _____



Name _____
Height _____
Shadow _____

Student		Flag
<u>height</u>	=	<u>height</u>
shadow		shadow
_____	=	_____ X _____
Height of Flag (x) = _____		



Flagpole
Height = x
Shadow = _____





Math Shadows

Teacher Tips (1 of 2)

Lesson Description: Math Shadows is a hands-on, outside-the-classroom lesson in which students use shadows, similar triangles, and proportions to indirectly measure the heights of several objects on campus. By measuring the height and shadow of a student and the shadow of an object (basketball hoop, tree, flagpole) the students can create proportions to mathematically discover the height of these objects. This is a fun, active lesson that can be completed in one class period.

Math Content: Indirect Measurement, Similar Triangles, Proportions, and Metric Measurement

Time Required: 1 Class Period

Math Shadows includes:

- * 3 Math Shadows student worksheets
- * 2 Math Shadows Teacher Tips pages
- * 1 Math Shadows Cover Sheet

Materials Needed: Tape Measures (inches or centimeters)

Suggested Grade Level: 5th - 8th

Teacher Testimonial:

Math Shadows is an activity lesson that gives students the opportunity to use some of their mathematical knowledge in the real world. They work in groups and walk around campus applying their math skills in order to find the heights of a tree, a basketball hoop, and a flagpole. A worksheet is included which allows the teacher to personalize the activity for his students by choosing other objects that are found on his own campus. Students enjoy the change of pace and the chance to work together.

Teacher Tips:

- * Be sure to select a **sunny day** to use this activity with your classes. If it is not sunny (and you cannot easily identify shadows) it will be impossible to complete this activity.
- * If you do not have a basketball hoop, tree, and flagpole on your campus that would work well for this activity you may want to create your own worksheet(s) using the template provided.
- * The first page, *Indirect Measurement 1*, is optional. If you have already taught this concept you may want to skip page one and let the students complete *Indirect Measurement 2* and possibly *Indirect Measurement 3*. The first page is intended to help teach the math concept of indirect measurement prior to students completing the rest of the lesson. The **rounded answer to the sample problem on page one is 1068 cm or 420 in.**
- * Decide ahead of time what units of measure (inches or centimeters) you want students to use as they complete the lesson. I prefer using the metric system because the decimals are easier to work with than all of the fractions involved in using feet and inches. At the end of the lesson we often convert the metric answers back to our standard feet and inches so that students have a better understanding of the results.

