**Objective:**

Find the height of an object indirectly by using similar triangles.

**Directions:**

There are 8 stations set up around the room. Students will be in groups of four to complete each station. At each station there will be a mirror on the floor, a measuring tape and a paper rectangle. It is your group’s job to find the height from the FLOOR to the TOP of the rectangle. In order to complete this without actually measuring with a measuring tape, you will need to investigate different lengths that will help you to create similar triangles. At each station there will be different units to which you should be measuring. Use your group for questions!

**A few hints:**

* YOU CANNOT JUST MEASURE FROM THE GROUND TO THE TOP OF THE CARD!
* The rectangle will be on one side of the mirror and one person from the group is to stand on the opposite side of the mirror
* You want to see the top of the rectangle in the mirror
* The angle of elevation from the mirror to the top of the rectangle  the angle of elevation from the floor to the top of the head of the person standing on the opposite side of the mirror

**Your responsibility by the end of class:**

* Record your data for each specified section in the tables
* Answer the questions at the end, on the last page
* One person at random from the group will turn in their packet

**Recording data:**

* Use the tables to record…
  + A conjecture on what you believe the height from the floor to the top will be
  + The lengths you measured, including the ones you found not in the similar triangles
  + A picture of your similar triangles
  + The final height of the cards

|  |  |
| --- | --- |
| **Station #1** | **Station #2** |

|  |  |
| --- | --- |
| **Station #3** | **Station #4** |
| **Station #5** | **Station #6** |
| **Station #7** | **Station #8** |

**Wrap-up questions:**

1. Explain in detail the procedure used to estimate the height of the card.
2. Does your answer for height change depending on which group member you measure? Explain.
3. If there was a tiny little mouse and a big grizzly bear, who would have to stand the farthest away from the mirror in order to see the top of a tree in the mirror? Why?
4. What else could you use similar triangles to find?
5. If a flag pole that is 120 inches tall casts a shadow of 6 feet, how long would 5 foot tall Ms. Bishop’s shadow be?

**1.MEASURE IN FEET**

**2.MEASURE IN CM**

**3.MEASURE IN INCHES**

**4.MEASURE IN FEET, ANSWER IN INCHES**

**5.MEASURE IN INCHES, ANSWER IN FEET**

**6.MEASURE IN INCHES, ANSWER IN CM.**

**7.MEASURE IN CM, ANSWER IN INCHES**

**8.MEASURE IN CM, ANSWER IN FEET**