**Lower Elementary:**

*Question:* Derek has won 3 awards. Hansel has won 1 award. What fraction of all the awards did Derek win?

**Upper Elementary:**

*Question:* Gasoline costs $1.45 per gallon. If a car’s gas tank holds 15 gallons in total and is only 1/5 full right now, then how much will it cost to fill up the tank?

**Middle School:**

*Question:* An ant is 1/16 of an inch tall. A middle school student is 41/2 feet tall. The student goes to a learning center that is 54 feet tall. If we scale by height, then how tall would a learning center for ants be?

**Algebra and Up:**

*Question:* A man throws a computer off of a platform straight to the ground. It falls 16 feet and hits the ground in 1/2 of a second. Consider this equation for vertical distance traveled in terms of initial velocity, time, and acceleration due to gravity (32 feet/second2):

(***distance***) = (***initial velocity***)(***time***) – 1/2(***acceleration due to gravity***)(***time***)2

What is the initial velocity of the computer?

(Hint: The computer is traveling straight down, so the distance it travels is -16 feet in this instance.)

**Lower Elementary:**

*Question:* Derek has won 3 awards. Hansel has won 1 award. What fraction of all the awards did Derek win?

*Answer:* 3/4

*Solution:* To find the fraction, we first need to add up all of the awards to find the whole: 3 + 1 = 4. Derek won 3 out of the 4 awards, so the fraction of all the awards that Derek won is 3/4.

**Upper Elementary:**

*Question:* Gasoline costs $1.45 per gallon. If a car’s gas tank holds 15 gallons in total and is only 1/5 full right now, then how much will it cost to fill up the tank?

*Answer:* $17.40

*Solution:* If the gas tank is 1/5 full, then it will need 4/5 × 15 = 12 gallons of gas to fill it. The 12 gallons of gas it takes to fill the tank costs $1.45 × 12 = $17.40.

**Middle School:**

*Question:* An ant is 1/16 of an inch tall. A middle school student is 41/2 feet tall. The student goes to a learning center that is 54 feet tall. If we scale by height, then how tall would a learning center for ants be?

*Answer:* 3/4 of an inch

*Solution:* The learning center is 54 ÷ 41/2 = 12 times the height of the student. So, the learning center for ants should be 12 times the height of the ant. Since 1/16 × 12 = 12/16 and 12/16 reduces to 3/4, the learning center for ants would be 3/4 of an inch tall.

**Algebra and Up:**

*Question:* A man throws a computer off of a platform straight to the ground. It falls 16 feet and hits the ground in 1/2 of a second. Consider this equation for vertical distance traveled in terms of initial velocity, time, and acceleration due to gravity (32 feet/second2):

(***distance***) = (***initial velocity***)(***time***) – 1/2(***acceleration due to gravity***)(***time***)2

What is the initial velocity of the computer?

(Hint: The computer is traveling straight down, so the distance it travels is -16 feet in this instance.)

*Answer:* 24 feet per second straight down

*Solution:* If we plug all our given values into the equation, we get this:

-16 = ***x***(1/2) – 1/2(32)( 1/2)2

If we simplify that equation, we get this:

-16 = ***x***(1/2) – 4

If we then solve for ***x***, we get -24. The initial velocity of the computer is therefore 24 feet per second straight down.