**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 $1.15 per litre. If a car’s gas tank holds 55 litres 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 1/6 of a centimetre tall. A middle school student is 11/5 metres tall. The student goes to a learning centre that is 18 metres tall. If we scale by height, then how tall would a learning centre for ants be?

**Algebra and Up:**

*Question:* A man throws a computer off of a platform straight to the ground. It falls 5 metres and hits the ground in half of a second. Consider this equation for vertical distance travelled in terms of initial velocity, time, and acceleration due to gravity (9.8 m/second2):

(***distance***) = (***initial velocity***)(***time***) – 0.5(***acceleration due to gravity***)(***time***)2

What is the initial velocity of the computer?

(Hint: The computer is travelling straight down, so the distance it travels is -5 metres 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 $1.15 per litre. If a car’s gas tank holds 55 litres in total and is only 1/5 full right now, then how much will it cost to fill up the tank?

*Answer:* $50.60

*Solution:* If the gas tank is 1/5 full, then it will need 4/5 × 55 = 44 litres of gas to fill it. The 44 litres of gas it takes to fill the tank costs $1.15 × 44 = $50.60.

**Middle School:**

*Question:* An ant is 1/6 of a centimetre tall. A middle school student is 11/5 metres tall. The student goes to a learning centre that is 18 metres tall. If we scale by height, then how tall would a learning centre for ants be?

*Answer:* 21/2 of a centimetre

*Solution:* The learning centre is 18 ÷ 11/2 = 15 times the height of the student. So, the learning centre for ants should be 15 times the height of the ant. Since 1/6 × 15 = 15/6 and 15/6 reduces to 21/2, the learning centre for ants would be 21/2 of a centimetre tall.

**Algebra and Up:**

*Question:* A man throws a computer off of a platform straight to the ground. It falls 5 metres and hits the ground in half of a second. Consider this equation for vertical distance travelled in terms of initial velocity, time, and acceleration due to gravity (9.8 m/second2):

(***distance***) = (***initial velocity***)(***time***) – 0.5(***acceleration due to gravity***)(***time***)2

What is the initial velocity of the computer?

(Hint: The computer is travelling straight down, so the distance it travels is -5 metres in this instance.)

*Answer:* 7.55 metres per second straight down

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

-5 = ***x***(0.5) – 0.5(9.8)(0.5)2

If we simplify that equation, we get this:

-5 = ***x***(0.5) – 1.225

If we then solve for ***x***, we get -7.55. The initial velocity of the computer is therefore 7.55 metres per second straight down.