**Lower Elementary:**

*Question:* One robot can lift and carry 900 pounds. A second robot can lift and carry 1,800 pounds. If the robots work together, can they lift a boulder that weighs 2,500 pounds?

**Upper Elementary:**

*Question:* A fruit punch powered robot has a box-shaped punch tank that is 10 centimeters wide, 20 centimeters long, and 30 centimeters high. If the tank already has 600 cubic centimeters of punch in it, how much more punch can the robot hold?

**Middle School:**

*Question:* There are three different types of robot batteries. A blue battery lasts as long as three green batteries. Two green batteries last as long as five yellow batteries. How many yellow batteries last as long as a blue battery?

**Algebra and Up:**

*Question:* A robot can run 25 meters per second. The robot’s robot dog, K9, can run 20 meters per second. If K9 runs away from the robot and the robot starts chasing it 10 seconds later, how long will it take for the robot to run and catch K9?

**Lower Elementary:**

*Question:* One robot can lift and carry 900 pounds. A second robot can lift and carry 1,800 pounds. If the robots work together, can they lift a boulder that weighs 2,500 pounds?

*Answer:* Yes

*Solution:* Together, the robots can lift 900 + 1,800 = 2,700 pounds. Since 2,500 pounds is less than 2,700 pounds, the robots can lift the boulder.

**Upper Elementary:**

*Question:* A fruit punch powered robot has a box-shaped punch tank that is 10 centimeters wide, 20 centimeters long, and 30 centimeters high. If the tank already has 600 cubic centimeters of punch in it, how much more punch can the robot hold?

*Answer:* 5,400 cubic centimeters

*Solution:* The volume of a box is its length multiplied by its width multiplied by its height. So, the volume of the tank is 10 × 20 × 30 = 6,000 cubic centimeters. Since the tank already has 600 cubic centimeters of punch in it, it can hold 6,000 – 600 = 5,400 cubic centimeters more.

**Middle School:**

*Question:* There are three different types of robot batteries. A blue battery lasts as long as three green batteries. Two green batteries last as long as five yellow batteries. How many yellow batteries last as long as a blue battery?

*Answer:* 7.5 yellow batteries

*Solution:* The ratio of blue batteries to green batteries is 1 blue to 3 green. The ratio of green batteries to yellow batteries is 2 green to 5 yellow. To compare the ratios, we’ll need to multiply each so that they have the same number of green batteries: there are 2 blues to 6 greens, and 6 greens to 15 yellows. That means that there are 2 blues to 15 yellows, which is the same as 1 blue to 7.5 yellows. So, 7.5 yellow batteries last the same amount of time as a blue battery.

**Algebra and Up:**

*Question:* A robot can run 25 meters per second. The robot’s robot dog, K9, can run 20 meters per second. If K9 runs away from the robot and the robot starts chasing it 10 seconds later, how long will it take for the robot to run and catch K9?

*Answer:* 40 seconds

*Solution:* By the time the robot starts running, K9 has already gone 20 × 10 = 200 meters. So, we need to know when the distance the robot can run in ***x*** seconds is equal to 200 meters more than K9 can run in the same amount of time:

25***x*** = 200 + 20***x***

5***x*** = 200

***x*** = 40 seconds.