**Lower Elementary:**

*Question:* One robot can lift and carry 900 kilograms. A second robot can lift and carry 1800 kilograms. If the robots work together, can they lift a boulder that weighs 2,500 kilograms?

**Upper Elementary:**

*Question:* A fruit punch powered robot has a box-shaped punch tank that is 10 centimetres wide, 20 centimetres long, and 30 centimetres high. If the tank already has 600 cubic centimetres 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 metres per second. The robot’s robot dog, K9, can run 20 metres 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 kilograms. A second robot can lift and carry 1800 kilograms. If the robots work together, can they lift a boulder that weighs 2500 kilograms?

*Answer:* Yes

*Solution:* Together, the robots can lift 900 + 1800 = 2700 kilograms. Since 2500 kilograms is less than 2,700 kilograms, the robots can lift the boulder.

**Upper Elementary:**

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

*Answer:* 5,400 cubic centimetres

*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 = ,000 cubic centimetres. Since the tank already has 600 cubic centimetres of punch in it, it can hold 6000 – 600 = 5400 cubic centimetres 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 metres per second. The robot’s robot dog, K9, can run 20 metres 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 metres. So, we need to know when the distance the robot can run in ***x*** seconds is equal to 200 metres more than K9 can run in the same amount of time:

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

5***x*** = 200

***x*** = 40 seconds.