Challenge 3: Building a Space Rover

Purpose: To design, build, and calculate the weight of a space rover using a Lego robotics kit.

RED bricks weigh 100kg each
BLUE bricks weigh 150kg each
GREY pieces weigh 50kg each
GREEN pieces weigh 350kg each
WHEELS weigh 72kg each
BLACK pieces weigh 18kg each

Third Graders Challenge:

- Create a space rover weighing less than 1,000 kilograms with mathematical evidence and pictures to support their process.

Fourth Graders Challenge:

- Create a space rover weighing less than 1,000 kilograms with mathematical evidence and pictures to support their process.

- Students calculated the weight of their rover on the moon (1/10 of the Earth's gravity) or on Mars (⅓ of the Earth's gravity) with mathematical evidence to support their thinking.

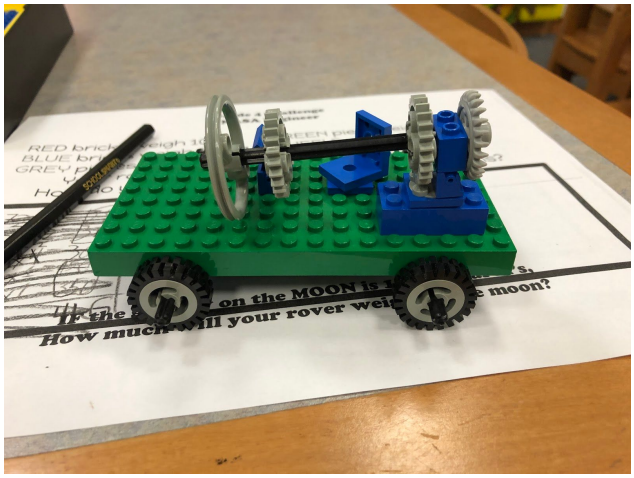
Fifth Graders Challenge:

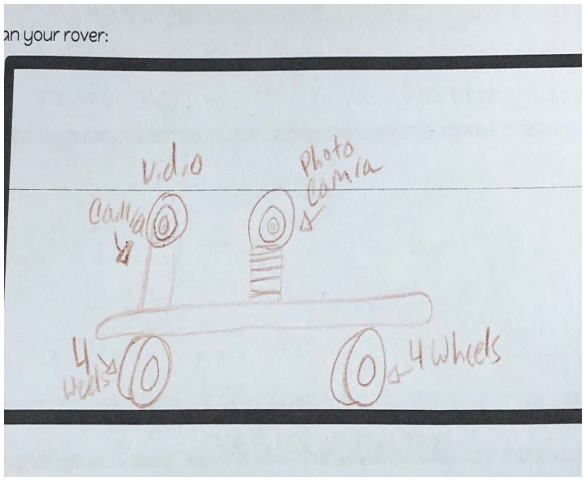
- Create a space rover weighing less than 1,000 kilograms with mathematical evidence and pictures to support their process.

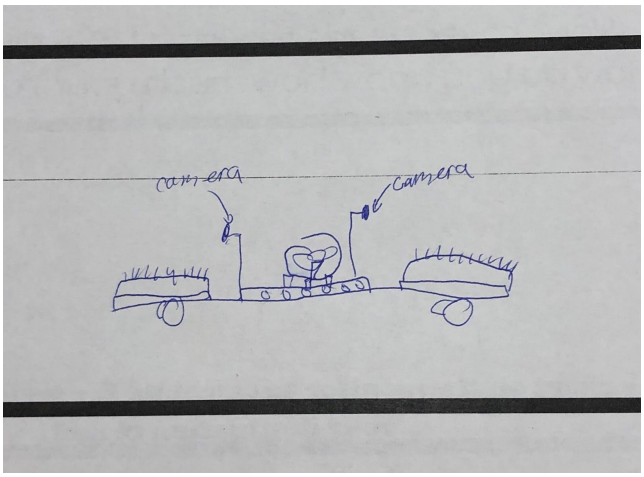
- Students calculated the weight of their rover on a destination planet (using the chart below) with mathematical evidence to support their thinking.

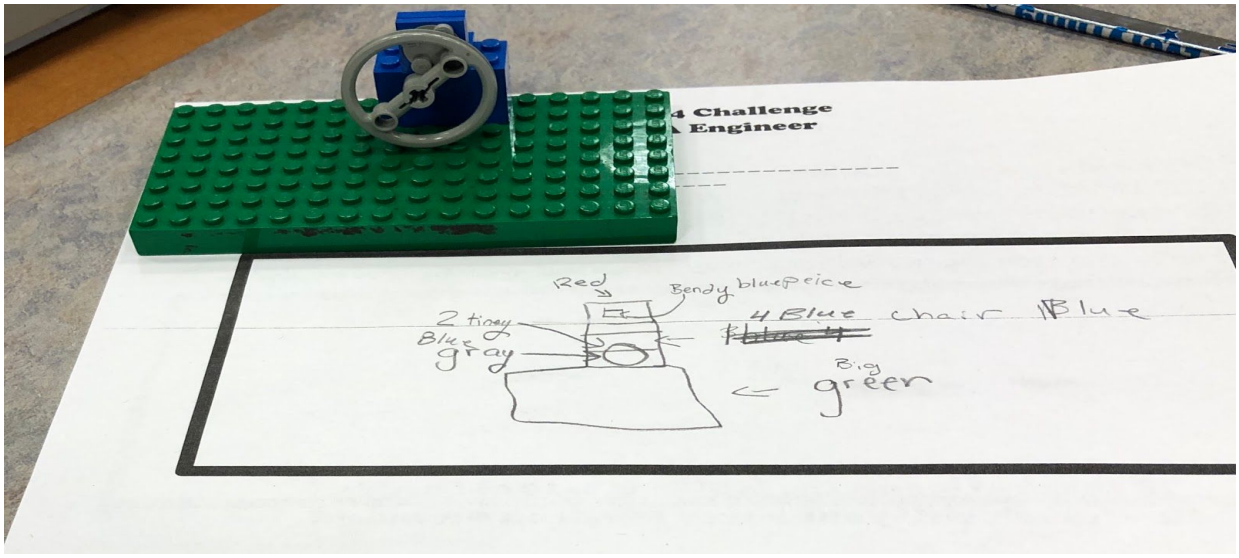
Mercury's gravity is .3 of earth's
Venus's gravity is .9 of earth's
Mars's gravity is .3 of earth's
Jupiter's gravity is 2.5 of earth's
Saturn's gravity is the same as earth's
Uranus is .87 of earth's
Neptune is 1.14 of earth's

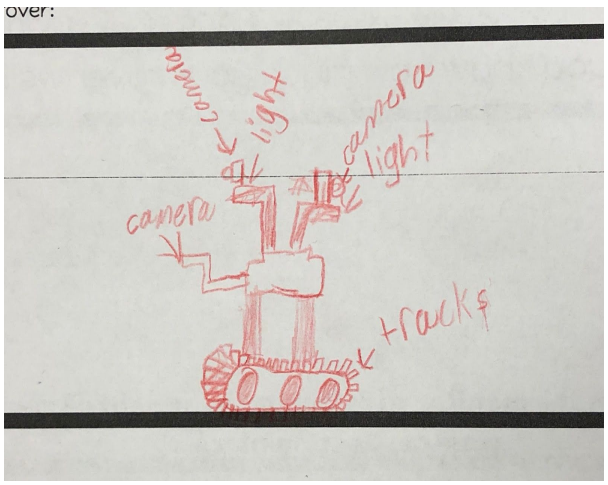
Artifacts from the Space Rover Challenge:

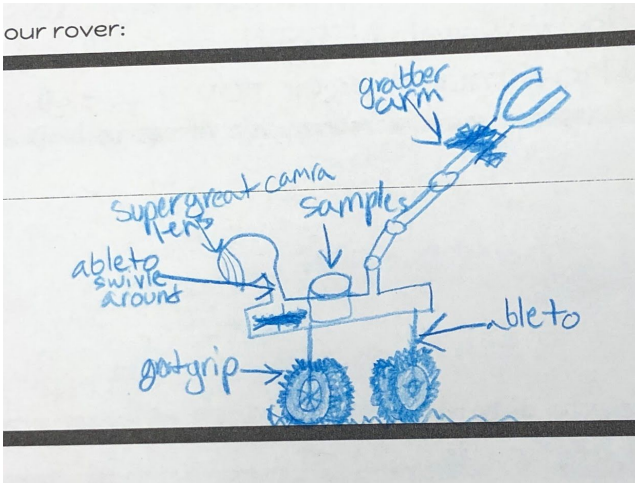


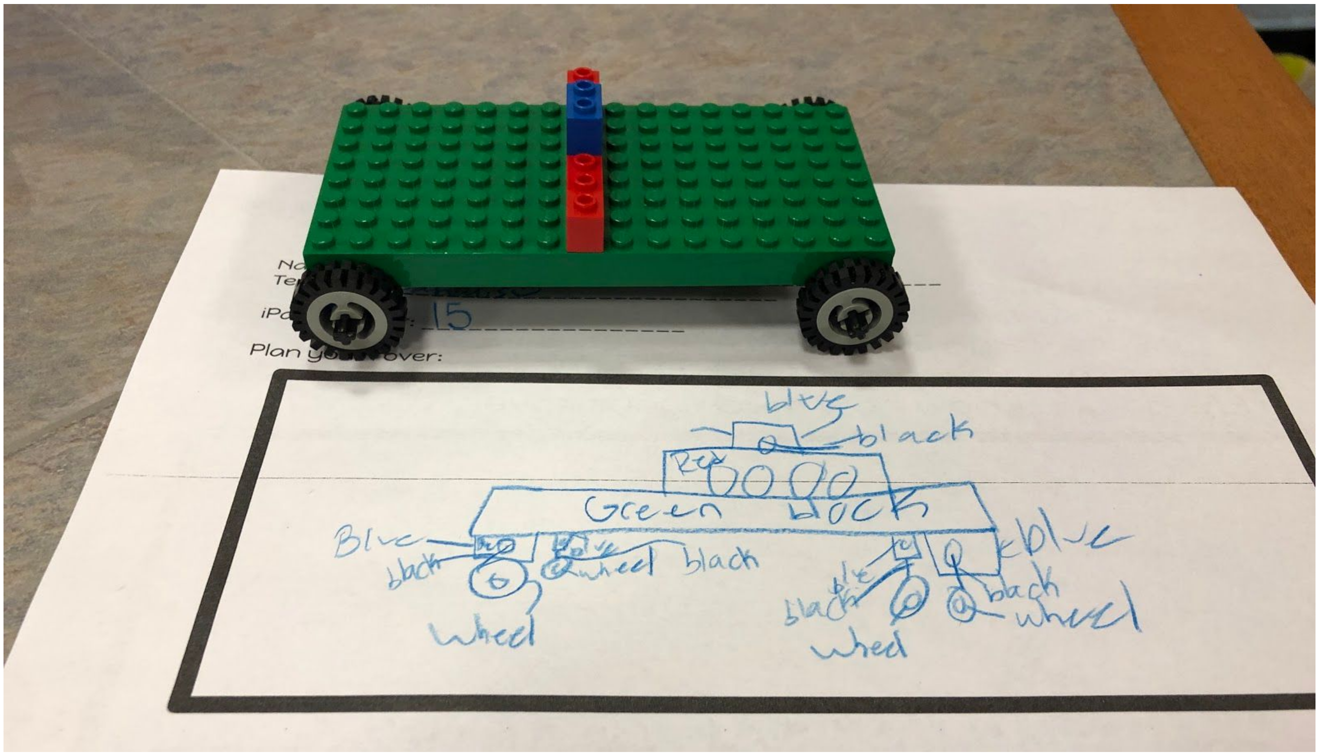

n your rover:
video
Photo camra
4 wheels
4 wheels

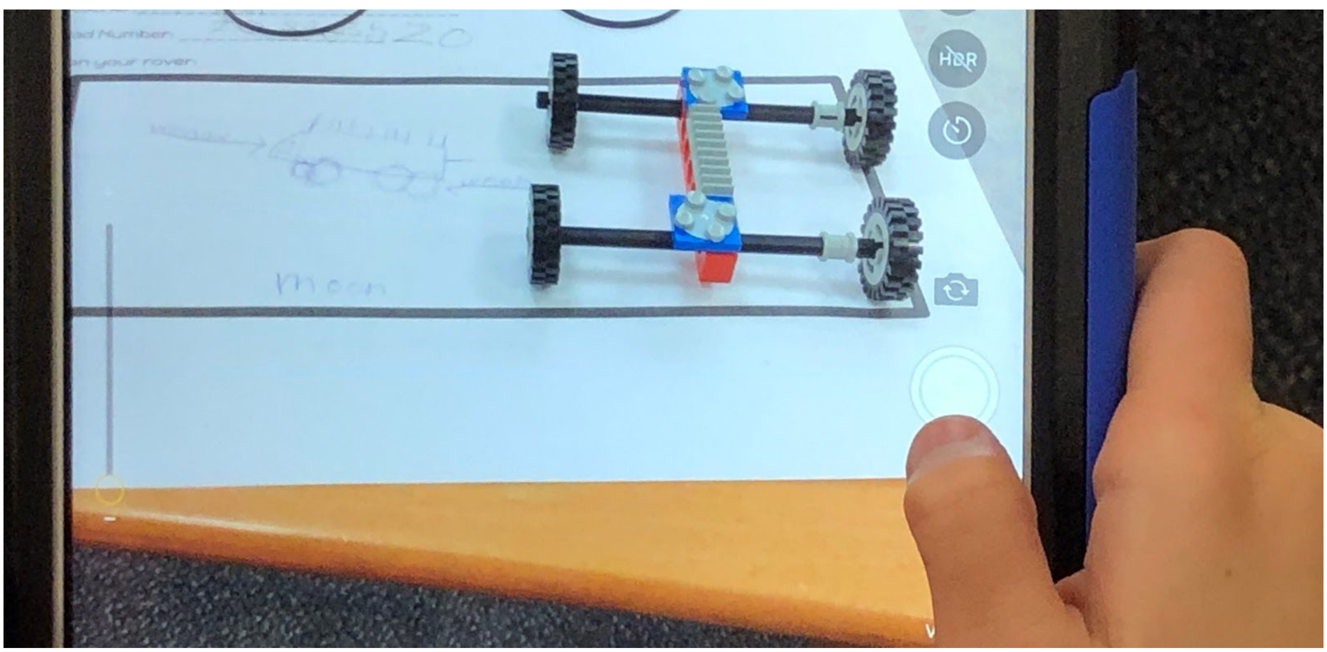

camera
camera


Red
Bendy bluePeice
4 Blue chair Blue
2 tiny Blue gray
Big green


over:
camera
light
camera
light
camera
tracks


our rover:
grabber arm
supergreat camra
samples
ableto swivle around
ableto
gotgrip


blue
black
Red
Green block
Blue
black
wheel
black
wheel
black
blue
black
wheel
15


HDR
moon

Grade 5 Challenge
NASA Engineer

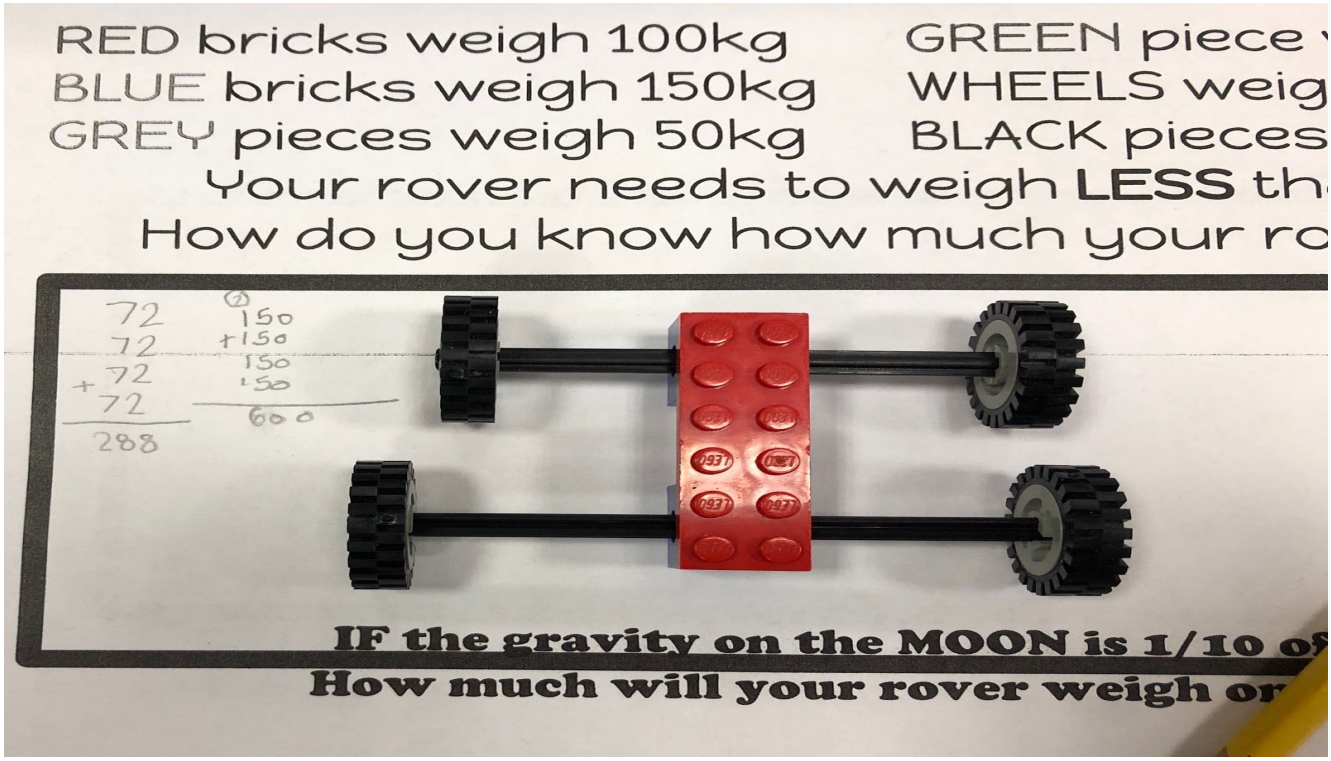
RED bricks weigh 100kg
BLUE bricks weigh 150kg
GREY pieces weigh 50kg
GREEN piece weighs 350kg
WHEELS weigh 72kg each
BLACK pieces weigh 18kg

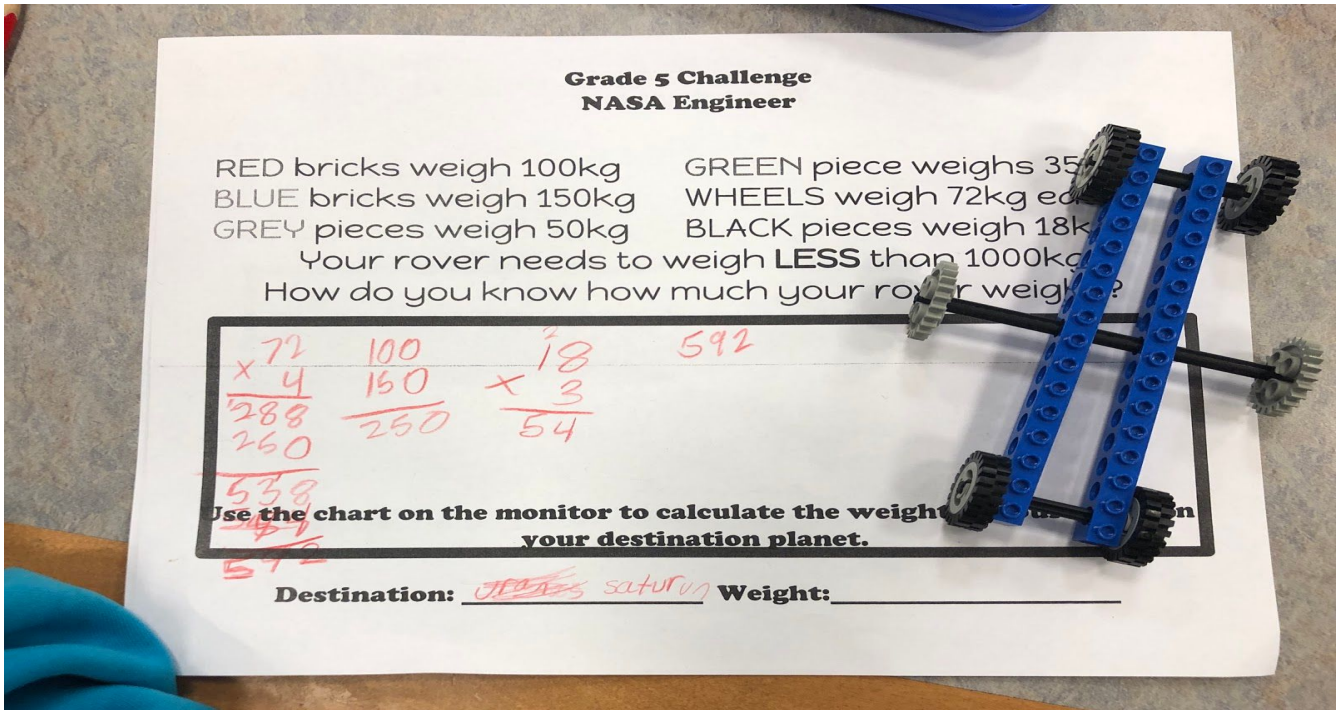
Your rover needs to weigh **LESS** than 1000kg
How do you know how much your rover weighs?

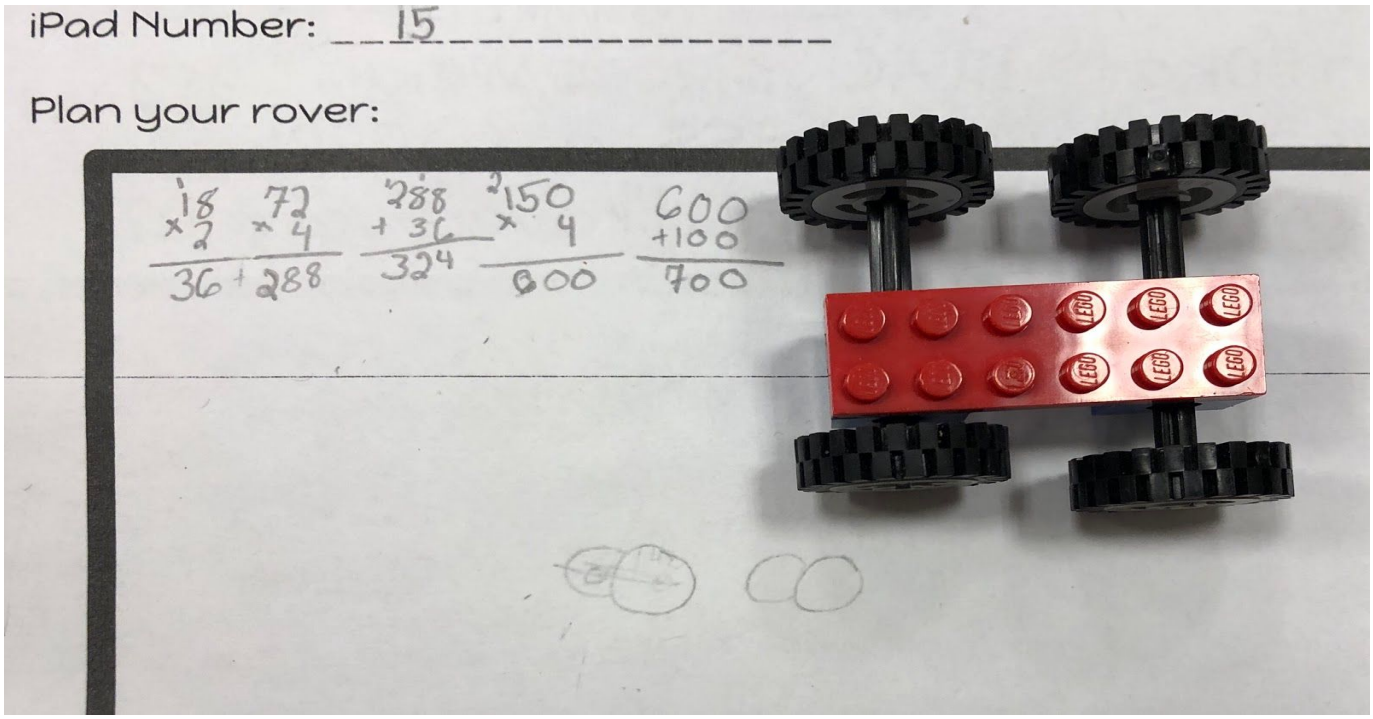
total weight= 756 kg

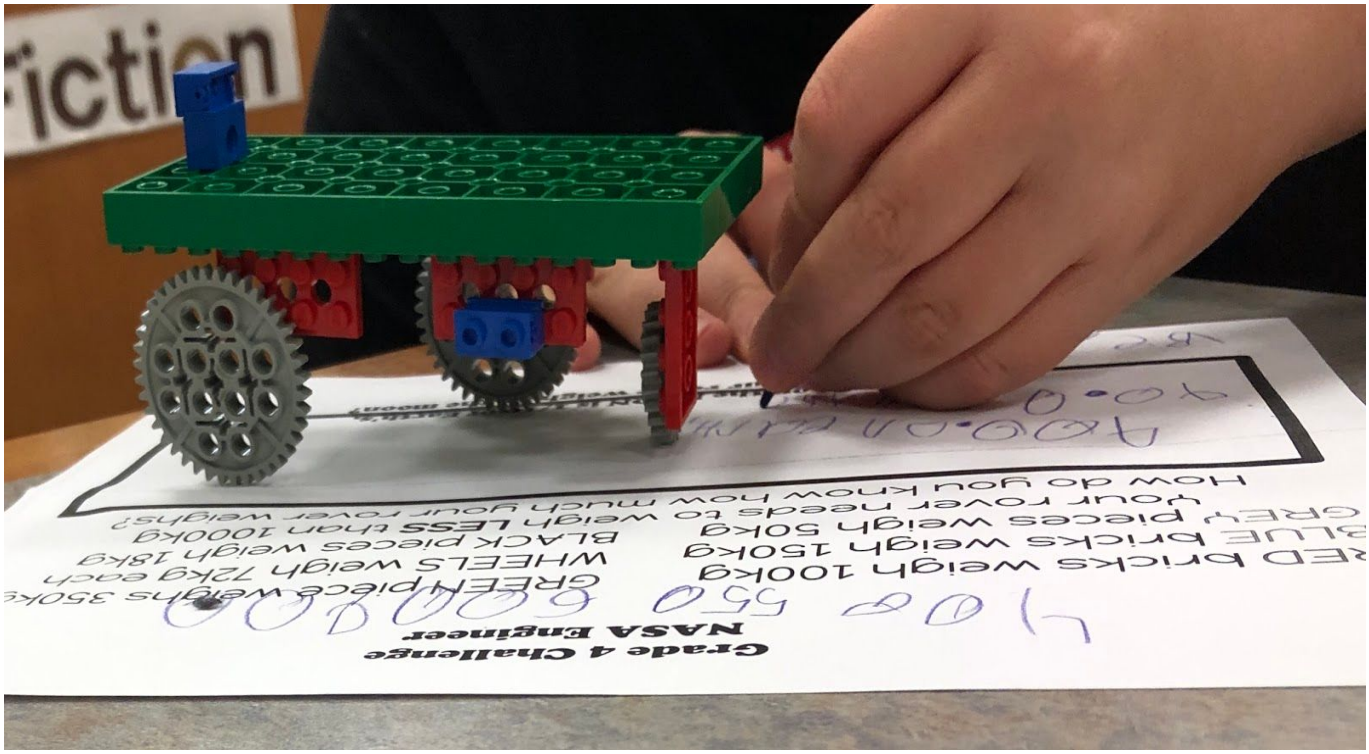
Use the chart on the monitor to calculate the weight of your rover on your destination planet.

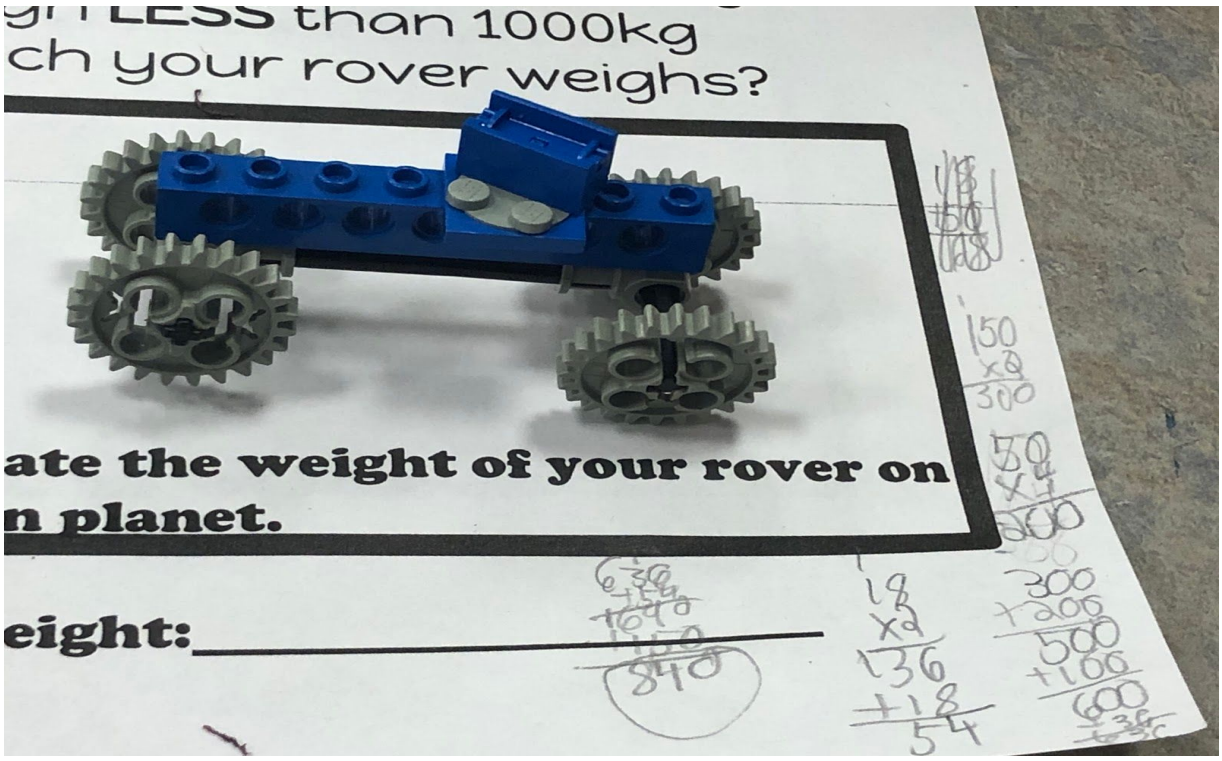
Destination: Venus **Weight:**

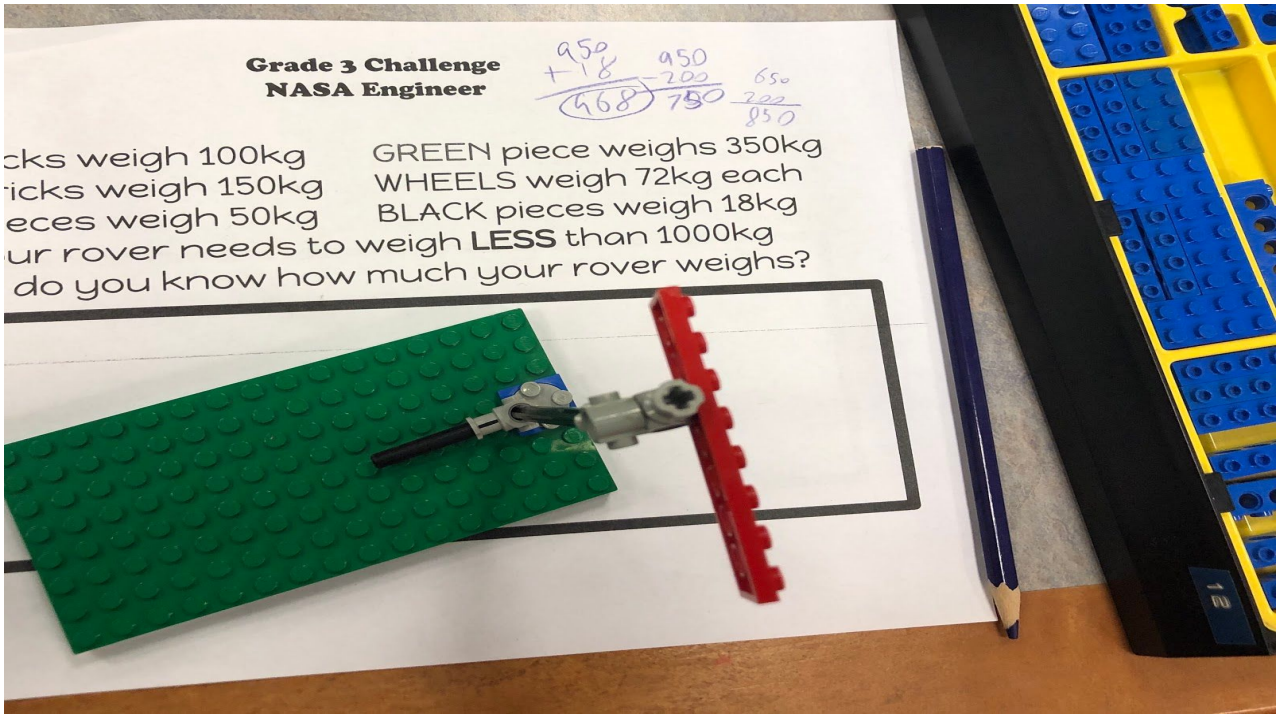


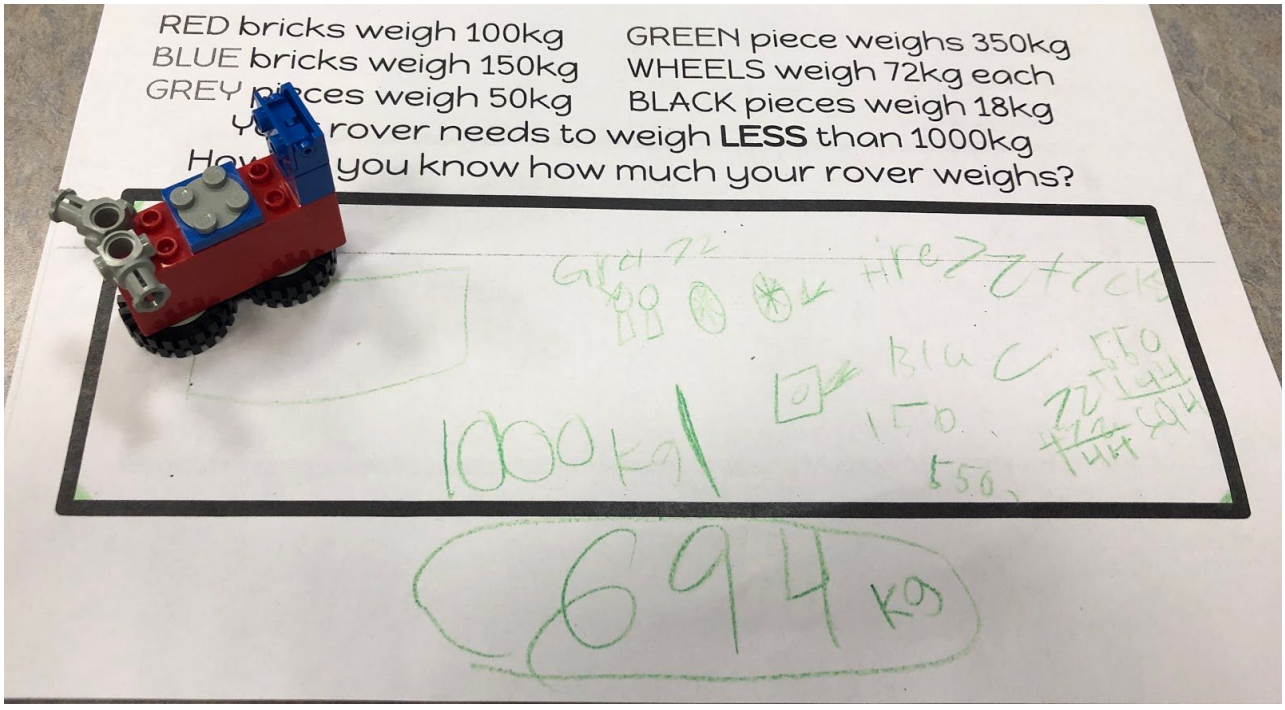

Grade 5 Challenge
NASA Engineer
RED bricks weigh 100kg
BLUE bricks weigh 150kg
GREY pieces weigh 50kg
Your rover needs to weigh LESS than 1000kg
How do you know how much your rover weighs?
72 x 4 = 288
100 + 150 = 250
18 x 3 = 54
288 + 250 + 54 = 592
Use the chart on the monitor to calculate the weight
your destination planet.
Destination: saturn
Weight:


iPad Number: 15
Plan your rover:
18 x 2 = 36
72 x 4 = 288
288 + 36 = 324
150 x 4 = 600
600 + 100 = 700


Grade 4 Challenge
NASA Engineer
How do you know how much your rover weighs?


than 1000kg
ch your rover weighs?
ate the weight of your rover on
n planet.
eight:


Grade 3 Challenge
NASA Engineer
cks weigh 100kg
icks weigh 150kg
eces weigh 50kg
GREEN piece weighs 350kg
WHEELS weigh 72kg each
BLACK pieces weigh 18kg
ur rover needs to weigh LESS than 1000kg
do you know how much your rover weighs?


RED bricks weigh 100kg
BLUE bricks weigh 150kg
GREY pieces weigh 50kg
GREEN piece weighs 350kg
WHEELS weigh 72kg each
BLACK pieces weigh 18kg
rover needs to weigh LESS than 1000kg
you know how much your rover weighs?
1000kg
694 kg