**Catapults: Launching into Physics**

**Pre and Post Assessment**

**Stem Grant Grade Band Team: 6-8A**

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 1. Figure B is a \_\_\_\_\_\_\_\_\_\_\_\_\_ of figure A.

A

B

* 1. Dilation
	2. Reflection
	3. Rotation
	4. Translation

A

B

 2. Figure B is a \_\_\_\_\_\_\_\_\_\_ of figure A.

1. Dilation
2. Reflection
3. Rotation
4. Translation

 3. What makes two shapes congruent?

1. Same shape, different size
2. Different shape, different size
3. Same shape, same size
4. Different shape, same size

 4. What makes two shapes similar?

1. Same shape, different size
2. Different shape, different size
3. Same shape, same size
4. Different shape, same size

 5. Calculate the **area** of a **circle** with a *12 inch* **diameter**. (show work)

 6. What unit of measure would you use to measure the length of a pencil?

* 1. Meter
	2. Millimeter
	3. Kilometer
	4. Centimeter

 7. What is the name of the following shape?

1. Square
2. Rectangle
3. Cube
4. Rectangular prism

 8. Two main outside **forces** acting on most anything on earth are

1. friction and mass.
2. friction and gravity.
3. gravity and inertia.
4. gravity and mass.

 9. An example of a **balanced** **force** is

1. a car sliding on ice.
2. a tug-of-war game in which no one wins.
3. a car hitting a telephone pole.
4. a roller coaster going down the first drop.

 10. An example of an **unbalanced** **force** (net force) is

1. a car parked in the garage.
2. a tug-of-war game in which no one wins.
3. a bridge.
4. a roller coaster going down the first hill.

 11. In physical science, a **push** or **pull** is called a(n)\_\_\_\_\_\_\_\_.

1. gravity
2. force
3. universal law
4. inertia

In the drawing below, the arrows labeled Force 1 and Force 2 represent two forces acting on an object. The directions of the arrows show the directions of the forces, and the lengths of the arrows represent the strengths of the forces.

 12 Newtons

20 Newtons

 12. Which total force (net force) is equal to the two forces acting on the object?

1. 8 Newtons
2. 22 Newtons
3. 32 Newtons
4. 240 Newtons

 13. Which vector diagram accurately shows forces acting on the car **as** it is being lifted?

a. b.

F*applied*

F*g*

F*f*

F*applied*

F*applied*

F*g*

F*f*

F*applied*

F*applied*

F*g*

F*f*

F*applied*

F*applied*

F*g*

F*f*

F*applied*

c. d.

 14. Which graph below shows an object moving at a constant speed?

A. B. C. D.



15. Rafael and Sammy were playing with soccer balls on a flat tile floor. Each boy rolled a soccer ball at the same time, and the balls hit, as shown below.



Which boy rolled his ball faster? How do you know? Draw two vector diagrams indicating the forces exerted on each ball just before Rafael and Sammy release their ball.