**NAME: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ #** Handed out on **2/12/19** Test on **2/21/19**

UNIT 3: INVISIBLE FORCES STUDY GUIDE

**IMPORTANT VOCABULARY:** You should be able to define each word and use it in a meaningful sentence.

**Force**

**Balanced forces**

**Unbalanced forces**

**Net force**

**Gravity**

**Mass**

**Friction**

**Resistance**

**Magnet**

**Attract**

**Repel**

**Magnetic poles**

**Magnetic field**

**PRACTICE QUESTIONS:**

3-PS2-1:

**What are these forces? Write balanced or unbalanced next to each situation.**

1. An arch bridge that doesn’t move when cars drive over it: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. Two friends push on a toy truck from opposite directions and the truck moves to the left: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. When teachers and students have a tug of war and the teachers cause the kids to fall: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
4. Two friends push on a toy truck from opposite directions and the truck doesn’t move: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Predict:** If my friend and I push on an object with equal force from opposite directions, what will MOST LIKELY happen:

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

3-PS2-2:

Two children pushed on a truck from opposite directions. They recorded what happened when they pushed on the truck at the same time.

|  |  |
| --- | --- |
| Trial # | Motion of object |
| 1 | Truck moved right |
| 2 | Truck moved left |
| 3 | Truck stayed still |
| 4 | Truck stayed still |

**Explain why the truck moved in trials 1 and 2, but not in trials 3 and 4.**

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Predict what will happen if I have 2 friends push on the same side of the truck. What evidence did you use to make this prediction?**

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

3-PS2-3:

What causes friction?

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Why do we experience friction, even on a smooth slide?

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\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

How can you create more friction? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

How can you create less friction? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

When I moved two bar magnets together, they repelled. Why did that happen? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Which charged particles move in between surfaces when you rub them together? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Why did the paper stick to my balloon in my demonstration during class? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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Draw a picture of the charges on the balloon and my arm after I’ve rubbed the balloon on my arm for 30 sec.

3-PS2-4:

**I keep losing my keys in my purse. Keys are not magnetic, but how could I use magnets to help solve this problem?**

IDEA:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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HOW TO TEST YOUR IDEA:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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**To study for your test:**

* Re-watch the Mystery Science videos (videos are linked on the 3rd grade website)
* Create vocabulary flash cards (Unit 3 vocabulary is posted on the third grade website)
* Review science notebook notes