

EXAMINING FORCES

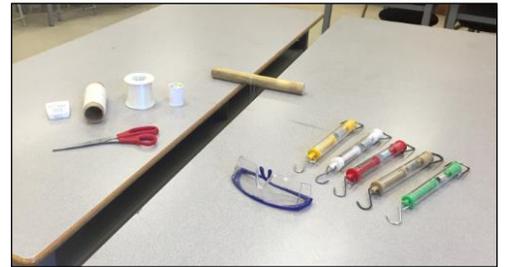
Please complete the following worksheet based on activity 4 from your Examining Forces experiments.

/1 **Purpose:**

The purpose of this activity is to examine the _____ of different materials.

/1 **Equipment:**

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-
-
-



/5 **Procedure:**

1. Cut off a _____ cm length of each of the test materials (thread, fishing line, dental floss and string.)
2. Tie each of the four materials into individual loops. Be sure the knot is tight.
3. Place two desks approximately _____ cm apart with a gym mat underneath the gap.
4. Place one of the loops over the dowel, and place the dowel between the two desks.
5. Use the spring scale to pull the loop down until the material breaks.
 - Only pull a spring scale to _____% of its maximum capacity.
6. Record the force that was needed to break the material.
7. Repeat steps 4 through 6 for each of the materials.
8. Choose one material and braid three pieces of that material together. Repeat steps 4 through 6 with the braided material.

Note: Consider the following safety concerns:

- All group members are to wear _____, as materials could potentially snap and fly up.
- The _____ must be placed under the person pulling the materials, so that no contact is made with the floor if the materials break suddenly.

/3 **Observations (How did it feel? What did you hear?):**

/2 **Data:**

Material	Tensial Strength

*If you did more testing, feel free to continue the table in the space below.

/1 **Conclusion:**

From strongest to weakest, the four test materials rank in this order:

/12 **Discussion:**

If you choose to do so, you may type these answers, print them, and attach them to this worksheet.

1. Define “tension” and “tensile strength” (2 marks).

Tension -

Tensile Strength -

2. List three potential sources of error for this experiment – you do not need to explain (3 marks).

1.

2.

3.

3. True or false, a piece of yarn or rope made by twisting several fibres together has much higher tensile strength than a single fibre. Explain (3 marks).

4. Tensile strength is an important property of material in the “real world.” Think of a situation in which this is true. Discuss how the testing we did would be important in that situation (4 marks).