Magnets and Engineering Design

Grade 3 Science Worksheet - Challenge Me

Name _____ Date _____

Circle the answer.

1. A balloon rubbed on wool bends a thin stream of water without touching it. Which other force also acts without touching?

   friction magnetism the pull of a rope a push from a hand

2. A bag of iron nails and wooden beads spilled together. Which plan separates them fastest?

   sweep a magnet over the pile to lift the nails

   shake the pile in water

   pick out each bead by hand

   blow on the pile to move the nails

3. A magnet latch on a cabinet is so strong that children cannot open it. Which change would help?

   turn the magnets so like poles face

   make the door heavier

   use two stronger magnets

   use a weaker magnet or add a thin spacer

4. Which test result shows that distance changes magnetic force?

   a clip jumps to the magnet at 1 cm but not at 6 cm

   a clip sticks to two different magnets

   a magnet sticks to a steel door

   a clip moves the same at 1 cm and at 6 cm

5. A toy car has a magnet on its back. A student pushes the car forward by holding a magnet behind it without touching. Which poles must face each other?

   opposite poles, so the car is pushed away

   any poles, since poles do not matter

   opposite poles, so the car is pulled back

   the same poles, so the car is pushed away

6. Engineers test three latch magnets. Each must hold a door shut but open with a pull of less than 10 units. Magnet A needs 4 units, B needs 8, C needs 15. Which magnets meet the goal?

C only A and B A only B and C

7. A class must design a gate latch that stays shut in wind but opens with a gentle pull. Which design fits best?

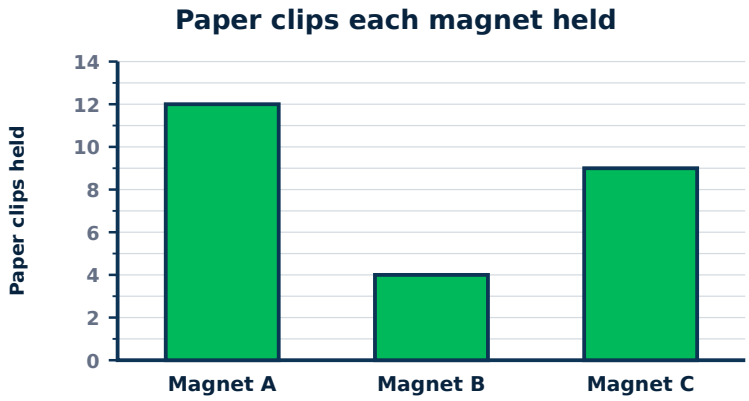
two magnets with opposite poles facing, on the gate and the post

strong glue on the gate

two magnets with like poles facing

a heavy rock in front of the gate

8. A sorting tool must lift at least 8 paper clips at once. Use the graph. Which magnets could be used?



A only A, B and C B and C A and C

9. A recycling plant has steel and aluminum cans mixed. After a magnet lifts out the steel cans, what is left on the belt?

the aluminum cans steel and aluminum cans only steel cans no cans at all

10. A magnet holds a sign through a door 1 cm thick but falls off a door 4 cm thick. What should the engineers try next?

a smaller magnet

two magnets with like poles facing

a stronger magnet or a thinner door

the same magnet with thicker wood

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Answer Key - Grade 3 Science Worksheet - Challenge Me

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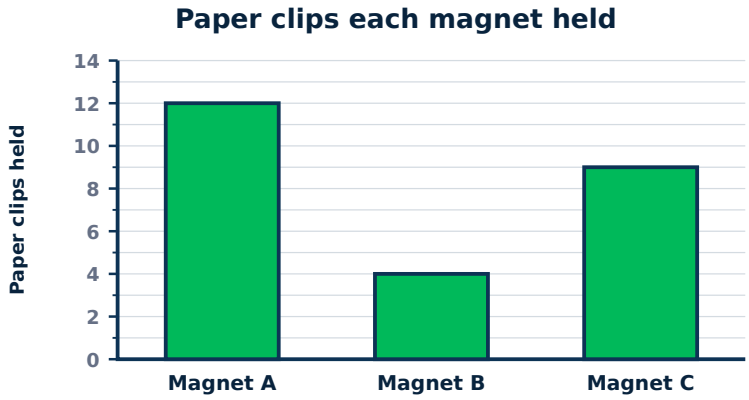
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