Magnets and Engineering Design

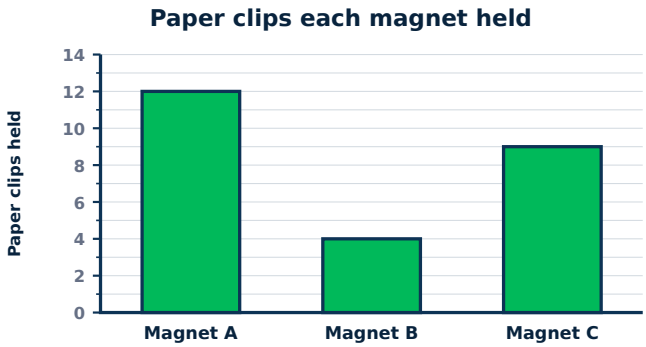
Grade 3 Science Worksheet - Challenge Me

Name _____ Date _____

Circle the answer.

1. A class must design a gate latch that stays shut in wind but opens with a gentle pull. Which design fits best?
   a heavy rock in front of the gate
   strong glue on the gate
   two magnets with opposite poles facing, on the gate and the post
   two magnets with like poles facing

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



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

3. 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 no cans at all only steel cans

4. 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?
   the same magnet with thicker wood
   a smaller magnet
   a stronger magnet or a thinner door
   two magnets with like poles facing

5. A student says magnetic force can pass through materials. Which test supports this?
   a magnet sticks to a steel desk
   a magnet moves a clip through a sheet of cardboard
   a magnet picks up a nail it touches
   two magnets push apart

6. Two magnets push apart. A student flips one magnet, and now they pull together. What does this show?
   magnets only pull, never push
   flipping makes a magnet stronger
   which poles face each other decides push or pull
   the magnet lost its pull

7. A balloon rubbed on wool bends a thin stream of water without touching it. Which other force also acts without touching?
friction a push from a hand the pull of a rope magnetism

8. A bag of iron nails and wooden beads spilled together. Which plan separates them fastest?
blow on the pile to move the nails
shake the pile in water
sweep a magnet over the pile to lift the nails
pick out each bead by hand

9. A magnet latch on a cabinet is so strong that children cannot open it. Which change would help?
make the door heavier
use a weaker magnet or add a thin spacer
use two stronger magnets
turn the magnets so like poles face

10. Which test result shows that distance changes magnetic force?
a clip sticks to two different magnets
a clip moves the same at 1 cm and at 6 cm
a clip jumps to the magnet at 1 cm but not at 6 cm
a magnet sticks to a steel door

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Answer Key - Grade 3 Science Worksheet - Challenge Me

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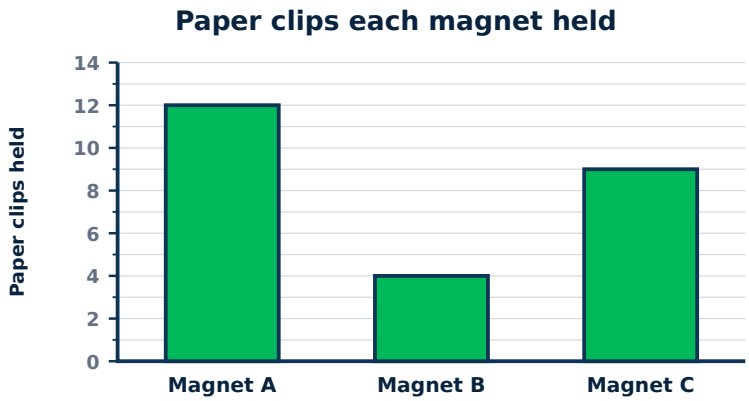
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