Magnets and Engineering Design

Grade 3 Science Worksheet - Challenge Me

Name _____ Date _____

Circle the answer.

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

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

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

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

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

6. 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 magnet sticks to a steel door
   a clip jumps to the magnet at 1 cm but not at 6 cm

7. 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 pulled back
   opposite poles, so the car is pushed away
   the same poles, so the car is pushed away
   any poles, since poles do not matter

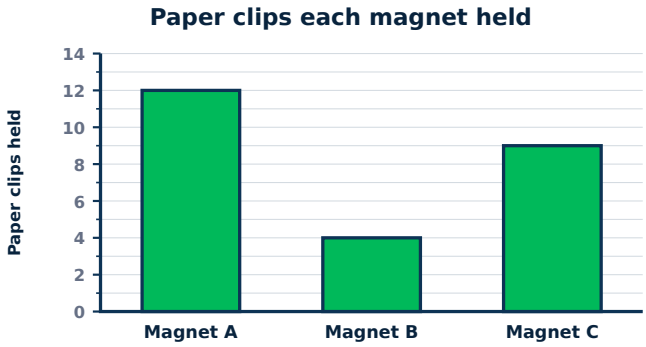
8. Engineers test three latch magnets. Each must hold a door shut but open with a pull of less than 10 units. Magnet A needs 4 units, B needs 8, C needs 15. Which magnets meet the goal?

B and C A and B C only A only

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

strong glue on the gate
two magnets with opposite poles facing, on the gate and the post
a heavy rock in front of the gate
two magnets with like poles facing

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



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

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Answer Key - Grade 3 Science Worksheet - Challenge Me

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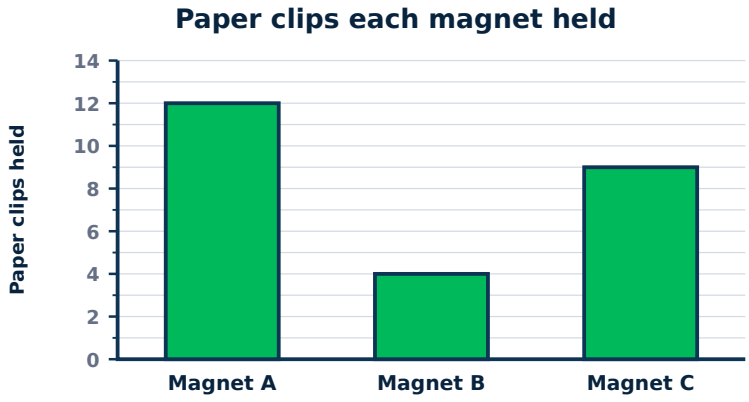
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