Compare Engineering Solutions

Grade 3 Science Worksheet - Challenge Me

Name _____ Date _____

Circle the answer.

1. Design A meets every criterion but breaks the material limit. Design B meets the limit but misses one criterion. What should engineers do next?
   choose A and ignore the limit
   build both again without changes
   improve the designs so one meets both
   choose B and ignore the missing goal

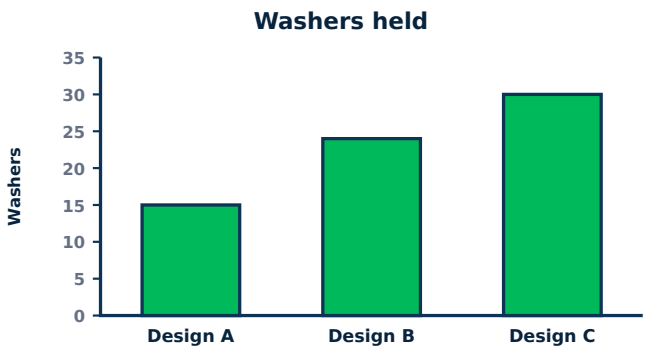
2. A wind-powered car goes farther with bigger sails but tips over more easily. What tradeoff does this show?
   speed versus distance speed versus wheel size sail size versus stability
   sail size versus cost

3. Two solutions both meet the criteria and constraints. What is a reasonable next step before choosing one?
   assume they perform the same
   test both again to see which works more reliably
   pick the one built first
   choose one without more testing

4. A class has three ramp designs and time to test only two. Which two should they test first?
   the two with the most parts
   the two most likely to meet the distance goal
   the two finished last
   the two made of the same material

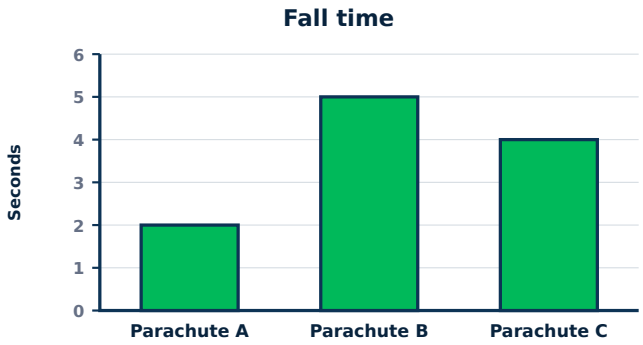
5. Two gliders are launched the same way. Glider A flies straight across the room. Glider B spins and drops. The goal is to fly straight and far. Which meets the goal?
   neither glider Glider A both gliders Glider B

6. The goal is a bridge that holds at least 20 washers using as little paper as possible. Design B uses 4 sheets and Design C uses 8 sheets. Use the graph. Which is the best choice?



Design C Designs A and C Design A Design B

7. The goal is a parachute that takes at least 4 seconds to fall. Use the graph. Which parachutes meet the goal?



B and C all three A and C B only

8. Design A held 10, 12 and 11 washers in three tests. Design B held 15, 4 and 14. The goal is a bridge that holds at least 10 washers every time. Which is better?
both, because each held 10 once
Design B, because it held the most once
Design A, because every test met the goal
Design B, because its total is higher

9. Slide A is faster, but children bump at the end. Slide B is slower, and children stop safely. If safety is the most important criterion, which is better?
Slide A both slides neither slide Slide B

10. Why might engineers combine the best parts of two designs?
to make sure neither design is used
to avoid testing either design
to make a new design that meets more criteria
to use more materials than allowed

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Answer Key - Grade 3 Science Worksheet - Challenge Me

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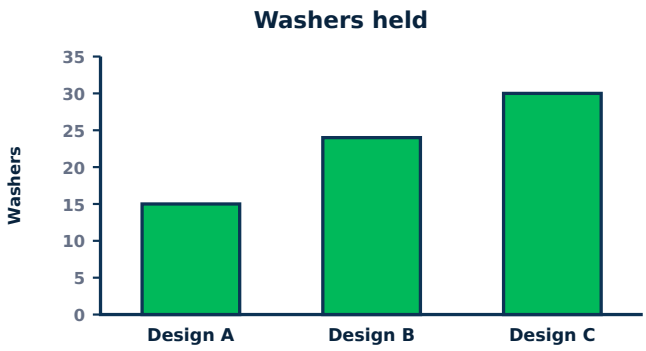
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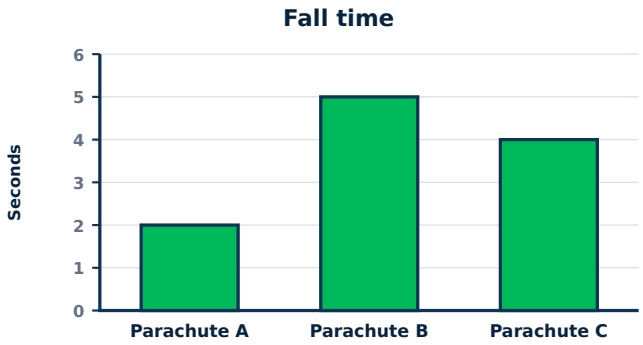
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