Compare Engineering Solutions

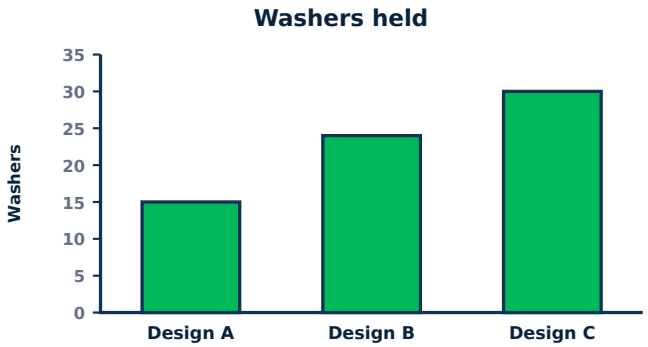
Grade 3 Science Worksheet - Challenge Me

Name _____ Date _____

Circle the answer.

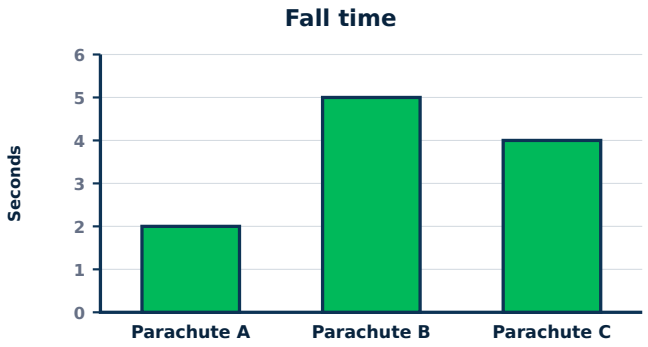
1. Two gliders are launched the same way. Glider A flies straight across the room. Glider B spins and drops. The goal is to fly straight and far. Which meets the goal?
   both gliders Glider A Glider B neither glider

2. 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 B Designs A and C Design C Design A

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



   B and C B only all three A and C

4. 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?
   Design B, because its total is higher
   Design B, because it held the most once
   Design A, because every test met the goal
   both, because each held 10 once

5. 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?
   neither slide Slide B both slides Slide A

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

7. A kite must stay up at least 5 minutes and cost less than $5. Kite A stayed up 6 minutes and costs $4. Kite B stayed up 7 minutes and costs $6. Which kites meet all the rules?
neither kite Kite A only Kite B only both kites

8. Which order shows how engineers usually compare and improve solutions?
compare to the goal, redesign, then test
redesign, test each design, then compare to the goal
build once, skip testing, keep the first design
test each design, compare results to the goal, redesign if needed

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

10. 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 cost
sail size versus stability

Scan to get this marked free. No screen time for your child.
Print it · do it in pencil · scan it · PencilGo picks the next sheet.

Compare Engineering Solutions

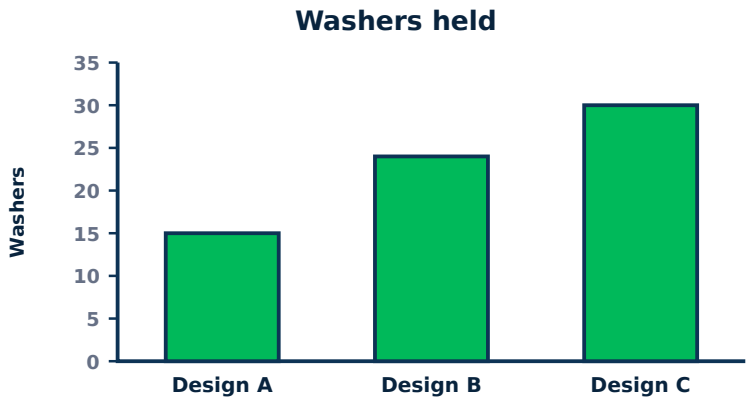
Answer Key - Grade 3 Science Worksheet - Challenge Me

Circle the answer.

1. 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?

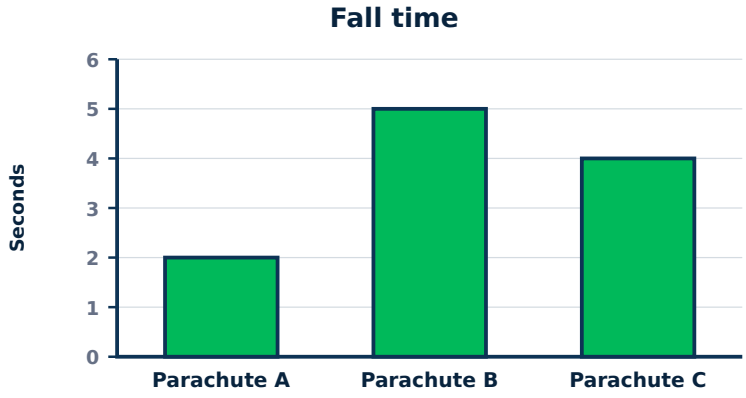
both gliders (Glider A) Glider B neither glider

2. 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 B) Designs A and C Design C Design A

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



(B and C) B only all three A and C

4. 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?

Design B, because its total is higher

Design B, because it held the most once

Design A, because every test met the goal

both, because each held 10 once

5. 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?

neither slide | Slide B | both slides | Slide A

6. Why might engineers combine the best parts of two designs?

to make sure neither design is used

to make a new design that meets more criteria

to use more materials than allowed

to avoid testing either design

7. A kite must stay up at least 5 minutes and cost less than $5. Kite A stayed up 6 minutes and costs $4. Kite B stayed up 7 minutes and costs $6. Which kites meet all the rules?

neither kite | Kite A only | Kite B only | both kites

8. Which order shows how engineers usually compare and improve solutions?

compare to the goal, redesign, then test

redesign, test each design, then compare to the goal

build once, skip testing, keep the first design

test each design, compare results to the goal, redesign if needed

9. Design A meets every criterion but breaks the material limit. Design B meets the limit but misses one criterion. What should engineers do next?

build both again without changes

choose A and ignore the limit

choose B and ignore the missing goal

improve the designs so one meets both

10. 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 cost

sail size versus stability