Define Engineering Problems

Grade 3 Science Worksheet - Challenge Me

Name _____ Date _____

Circle the answer.

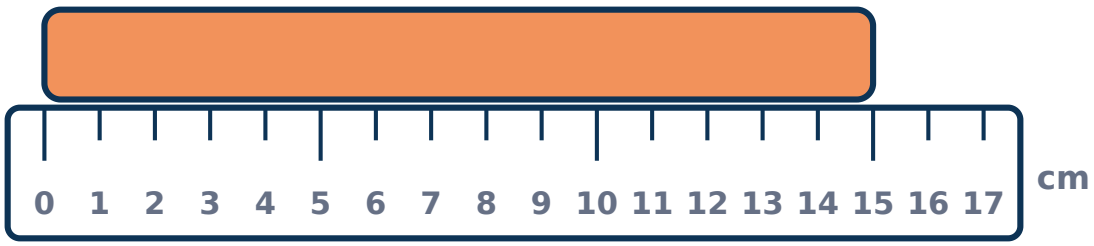
1. A bridge holds 25 washers. The goal was 20 washers, but the team used 3 more sheets of paper than allowed. Does it solve the problem?
   no, because it breaks the paper limit
   no, because it holds too many washers
   yes, because it holds more than 20 washers
   yes, because extra paper is fine if it works

2. A shade cover must shade a 2-meter bench and cost less than $20. Cover A shades 2 meters and costs $15. Cover B shades 3 meters and costs $25. Which fits the problem?
   neither cover Cover A Cover B both covers

3. Which is the best order for starting a design project?
   state the problem, list criteria and constraints, then brainstorm
   brainstorm, state the problem, then list criteria
   build a model, state the problem, then test
   list criteria, build, then state the problem

4. A greenhouse must keep plants above 40°F at night. On a 25°F night, the inside reads 45°F. Did it meet the goal?
   no, because it was 25°F outside
   no, because 45°F is below 40°F
   yes, because 45°F is above 40°F
   yes, because it was cold outside

5. A card bridge must span a gap of at least 18 cm. This bridge spans 15 cm. Does it meet the requirement?



   no, because it uses too many cards
   yes, because 15 cm is close enough
   no, because 15 cm is shorter than the 18 cm goal
   yes, because it uses only index cards

6. A doghouse must keep rain out and fit a yard 4 feet wide. Doghouse A is 3 feet wide and keeps rain out. Doghouse B keeps rain out but is 6 feet wide. Which solves the problem?
   neither doghouse Doghouse A only Doghouse B only both doghouses

7. A tower must be at least 30 cm tall and use no more than 20 straws. Tower A is 32 cm with 18 straws. Tower B is 35 cm with 20 straws. Which towers meet the rules?
both towers Tower A only Tower B only neither tower

8. A boat must hold 10 pennies and use one sheet of foil. Boat A holds 12 pennies but uses two sheets. Boat B uses one sheet but holds 7 pennies. Which boats meet the rules?
Boat B only both boats Boat A only neither boat

9. A bike rack must hold 12 bikes and fit a space 3 meters long. A student says it should look cool. Is looking cool a criterion of this problem?
yes, because it is a limit
no, because it is a constraint
yes, every idea is a criterion
no, it is not one of the stated needs

10. A class must keep an ice cube from melting for 30 minutes using only paper, foil and tape. Which is a constraint?
keep the ice cube from dripping
keep the ice cube for 30 minutes
fit the cube inside the holder
use only paper, foil and tape

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Answer Key - Grade 3 Science Worksheet - Challenge Me

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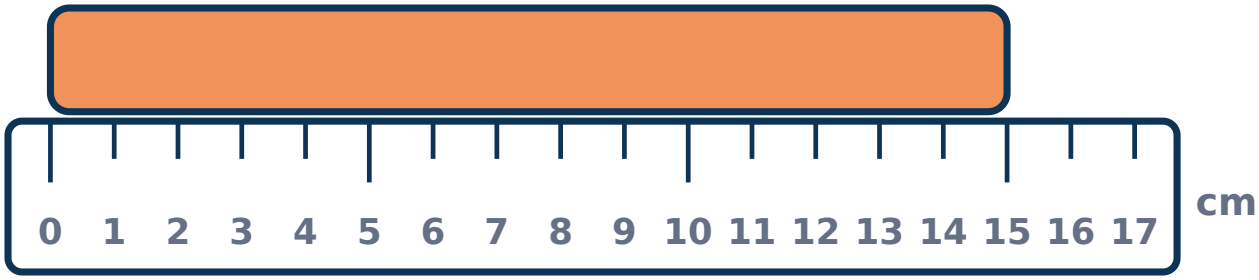
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