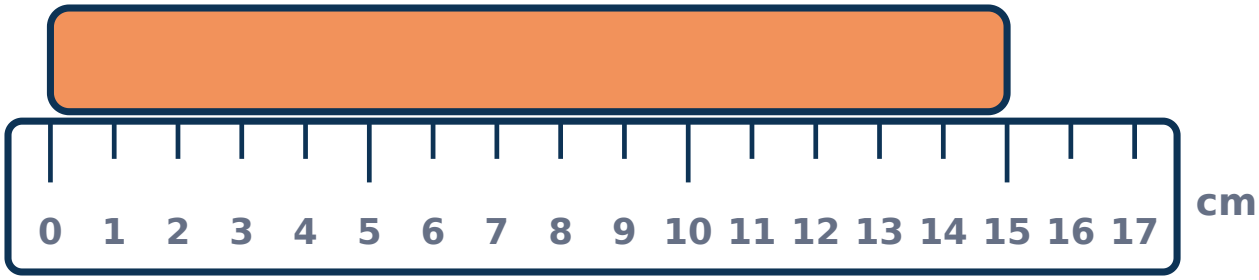
Define Engineering Problems

Grade 3 Science Worksheet - Challenge Me

Name _____ Date _____

Circle the answer.

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



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

2. 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?

   Doghouse A only Doghouse B only both doghouses neither doghouse

3. 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?

   Tower B only neither tower Tower A only both towers

4. 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 A only neither boat Boat B only both boats

5. 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?

   - no, because it is a constraint
   - yes, every idea is a criterion
   - yes, because it is a limit
   - no, it is not one of the stated needs

6. A class must keep an ice cube from melting for 30 minutes using only paper, foil and tape. Which is a constraint?

- use only paper, foil and tape
- keep the ice cube from dripping
- keep the ice cube for 30 minutes
- fit the cube inside the holder

7. A bird feeder must let small birds eat but keep squirrels out. Which question best defines the problem?

- How can a feeder be built quickly?
- How can a feeder hold the most seeds?
- How can squirrels reach the seeds faster?
- How can small birds reach the seeds while squirrels cannot?

8. Why should engineers talk with the people who will use a design before building it?

- to choose the materials for them
- to make the design cost more
- to learn what needs the design must meet
- to skip testing later

9. 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 extra paper is fine if it works
- yes, because it holds more than 20 washers

10. 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?

both covers Cover B Cover A neither cover

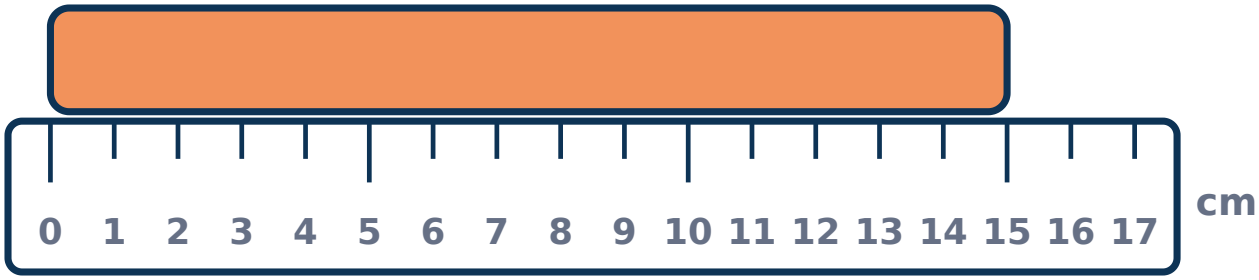
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Define Engineering Problems

Answer Key - Grade 3 Science Worksheet - Challenge Me

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