Engineering Design Challenges

Name: _____ Date: _____ Grade: Grade 4

Part A: Fill in the Blank

Write the missing word or number on each line.

1. Coming up with many possible solutions is called _____ .
2. When one choice gives up speed for strength, that is a _____ .
3. A bridge made from straws is cheap but not very _____ .
4. A paper airplane with wider wings flies slower but more _____ .
5. A water filter using sand and gravel removes _____ from dirty water.
6. Comparing two designs side by side is part of _____ solutions.
7. A faster marble run is fun, but it can be less _____ .
8. Choosing one design from many ideas is called _____ a solution.
9. Engineers often draw two ideas to compare _____ side by side.

Part B: Matching

Match each item on the left to the correct answer on the right.

1. Match each item to its correct answer.

Bridge project	→ _____	Trade-off between cost and strength
Paper airplane	→ _____	Trade-off between speed and steadiness
Water filter	→ _____	Trade-off between flow rate and cleanliness
Marble run	→ _____	Trade-off between speed and accuracy

Part A: Fill in the Blank

Write the missing word or number on each line.

1. Coming up with many possible solutions is called **brainstorming**.
2. When one choice gives up speed for strength, that is a **trade-off**.
3. A bridge made from straws is cheap but not very **sturdy**.
4. A paper airplane with wider wings flies slower but more **steady**.
5. A water filter using sand and gravel removes **particles** from dirty water.
6. Comparing two designs side by side is part of **evaluating** solutions.
7. A faster marble run is fun, but it can be less **accurate**.
8. Choosing one design from many ideas is called **selecting** a solution.
9. Engineers often draw two ideas to compare **designs** side by side.

Part B: Matching

Match each item on the left to the correct answer on the right.

1. Match each item to its correct answer.

Bridge project	→ **Trade-off between cost and strength**	Trade-off between cost and strength
Paper airplane	→ **Trade-off between speed and steadiness**	Trade-off between speed and steadiness
Water filter	→ **Trade-off between flow rate and cleanliness**	Trade-off between flow rate and cleanliness
Marble run	→ **Trade-off between speed and accuracy**	Trade-off between speed and accuracy