Unit 2 Review

What are the standards that help engineers determine how well a design is doing its job?

Criteria

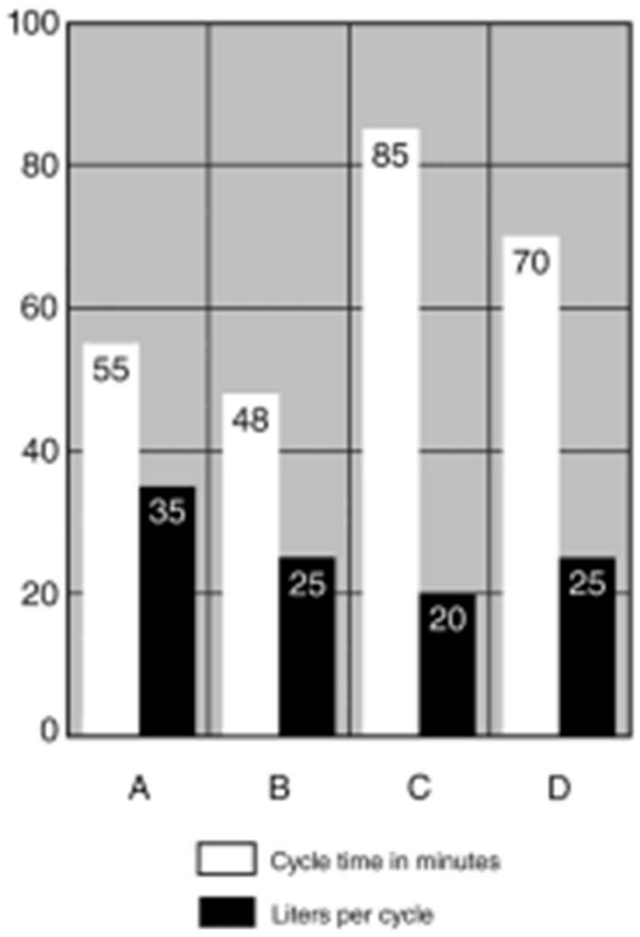
A group of engineers have develop four different models of a car. They have recorded data about each model's miles driven per gallon. What would be the BEST way for the engineers to communicate the results of their testing?

A. detail drawing of each car
B. a bar graph comparing miles per gallon
C. a measurement of the size of the gas tank in each car
D. A data table showing the number of miles each car traveled during testing.

B. A bar graph comparing miles per gallon.

Engineering want to develop a more efficient washing machine by decreasing the running time and the amount of water used per cycle. They design and test four different prototypes. The bar graph shows the results of their test.

Based on the evidence in the bar graph, which model BEST meets the engineers design criteria?



B. Model B

Jamie and Lou have designed and tested a tool to help them construct a backyard birdhouse. Now, they are writing a summary of their conclusions. What will these conclusions communicate?

A. whether the data reflected the purpose
B. whether the prototype met the criteria
C. whether the design matched the model
D. whether the design process created the data

B. Whether the prototype met the criteria.

Engineers design, model, and test many of the devices that we use every day. Which phrase below BEST describes the engineering process.

A. designing new industrial tools
B. gathering information to prove scientific method
C. using math and science to solve practical problems
D. using raw materials to build structures and machines

C. Using math and science to solve practical problems.

A student team is assigned to construct an object. They start by listing the steps they will follow. In the design process shown below, which is the missing element?

Find the Problem
????
Test & Improve
Redesign
Communicate

Plan & Build

Cell phones, toothbrushes, and door knobs are examples of which human accomplishment?

Technology

Which activities often comes after the others in the creative design process.

Redesign

Technology brings benefits but also risks. Which of the following is the best example of a physical risk associated with cell phones?

A. They distract people while driving.
B. They Link people to hurtful websites.
C. They cause students to get poor grades.
D. They are thrown away and end up in a landfills.

A. They distract people while driving.

Larry and David are asked to design a backpack with the purpose of making it less bulky. Which claim explains how the purpose of a design and the design criteria are related?

A. The purpose is only important until criteria are set.
B. Setting criteria shows whether the purpose was set correctly.
C. The purpose must be adjust before the prototype can be tested.
D. The criteria are set to determine whether the design achieves the purpose.

D. The criteria are set to determine whether the design achieves the purpose.

The picture shows a person using a walker to get around.

Which claim about this device is true?

A. It is not a prosthetic because a walker is not a biotechnology.
B. It is a prosthetic because the walker assists a damaged body part.
C. It is not a prosthetic because the people who use it have legs.

C. It is not a prosthetic because the people who use it have legs.

What does an engineering team need in order to test a new design?

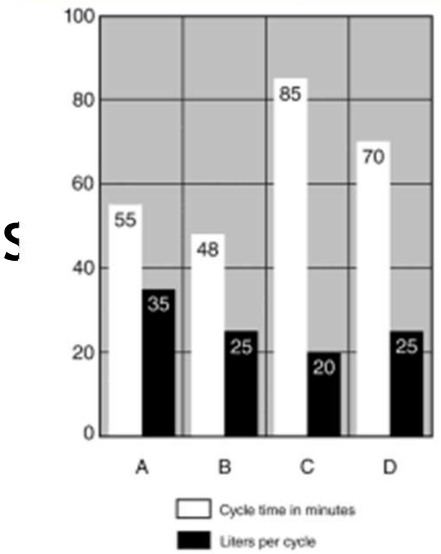
Prototype

A person is using crutches to help himself move around after a leg injury. Which claim explains why crutches are an example of biotechnology?

A. Engineers made them using the design process.
B. They are product used to benefit living things.
C. They are manufactured using Earth- friendly materials.
D. the wood they are made from comes from living things.

B. They are product used to benefit living things.

While further testing their design, the engineers discover that washing machines Model B doesn't wash clothes thoroughly. Which is the following is the best next step for the engineers?



A. Apply for a patent for he Model B.
B. Start all over with a brand-new design for a washing machine
C. Evaluate what is wrong with Model B and work to redesign it
D. Choose one of the other washing machines to manufacture instead of Model B.

C. Evaluate what is wrong with Model B and work to redesign it

Scientist or engineers often build a prototype of a design that can be tested. Observing how the prototype performs shows the engineer how their design works. What is another tool scientist use that is similar to a prototype?

A model of the design

The design criteria for a new artificial heart include measuring the heart's durability. The chart below shows results of the testing several models of a new artificial heart. Each model was tested until it showed obvious signs of wear.

Based on the evidence in the table, which two models best meet the criteria for durability?

Artificial Heart Model	Number of Times the Heart Beats (in thousands)
Model A	21,890
Model B	32,652
Model C	9,383
Model D	15,045

Models A & B

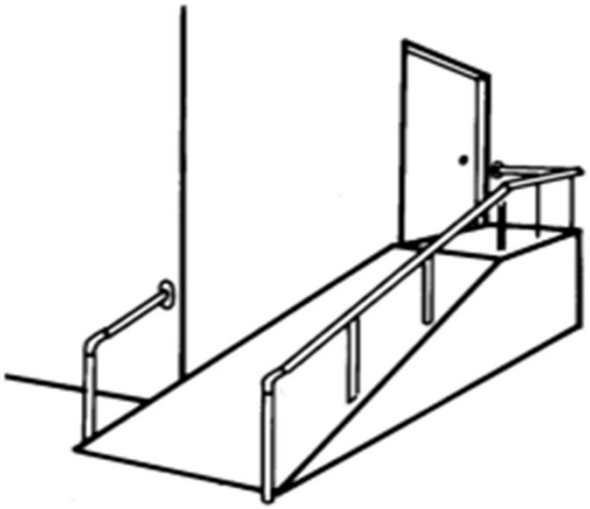
A group of engineers is working on a design to improve the technology of an artificial heart. Which of these criteria should the engineers include in their design?

A. It should efficiently pump blood to the lungs and body.
B. It should be made from common and affordable materials.
C. It should match the color and texture of a real human heart.
D. It should be able to controlled and adjusted by the patient.

A. It should efficiently pump blood to the lungs and body.

A movie theater installed a ramp like this one for people in wheelchairs to use.

The ramp helps them, but it is not a prosthesis. Why?



It does not replace a body part.

Which is true about the engineering design process?

A. It ends when the engineer builds a model.
B. It is used to solve all human problems.
C. It begins with identifying a problem.
D. Most engineers do not use it to solve problems.

C. It begins with identifying a problem.

Which of the following is a procedure you could use to predict design flaws in a fabric used to make sails for ships?

A. analyzing the ship's deck for strength
B. testing to see how much cargo a sailboat can carry
C. marketing the sails and recording customer complains
D. stressing the fabric with wind and weather over a period of time

D. stressing the fabric with wind and weather over a period of time