

Name: \_\_\_\_\_

Date: \_\_\_\_\_

Class: \_\_\_\_\_

Read Lesson pages carefully then answer the following questions.

## Word Play

1 Use the clues to help you write the correct word in each row. Some boxes have been filled in for you.

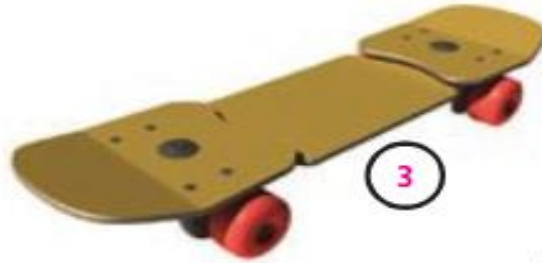
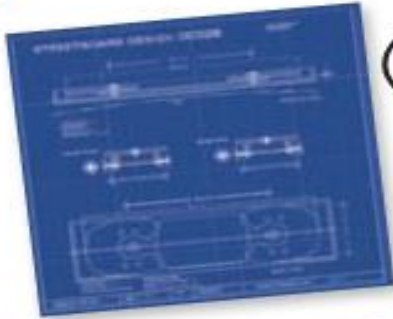
- A. To conceive something and prepare plans to build it
- B. The use of scientific and mathematical principles to develop something practical
- C. A prototype may undergo many rounds of this.
- D. Engineers have to be familiar with these principles.
- E. The answer to a problem
- F. A test version of something
- G. Is identified during the first step in the design process
- H. What comes after sketches, plans, and the prototype?
- I. Something that people will use is described as this.
- J. Engineers have to be familiar with these principles.

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		P	R	O	B	L	E	M											
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M	A	T	H	E	M	A	T	I	C	A	L								



# Apply Concepts

**2** Write numbers in the circles to put the pictures in the correct order.



1



4



**3** How is a prototype different from the finished product?

**Sample answer:** A prototype is similar to the finished product in one or more ways, but not in all ways. It may look just like the product, but not function.

It may do exactly what the product will do, but not look the same as the product.

**4** Why is it better to build and test a prototype of a product than to produce tens of thousands of the product and then test it?

**Sample answer:** If the test results show there is a problem, you have not built tens of thousands of something that doesn't work right.

5

The owner of a safety apparel company asks an engineer to "design a better helmet for skateboarders." How would you improve this instruction?

Sample answer: Our current  
skateboard helmets make skaters'  
heads too hot. We need a new helmet  
that is lightweight and just as strong,  
but cooler to wear.

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6

Which job is more likely to be done by an engineer? Why?

Developing a new material that will be used to make the outer covering of vitamin capsules	Determining how vitamins are absorbed into the bloodstream
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Sample answer: The first job is more likely. Engineers make things that people use, and the new material is something that people will use.

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