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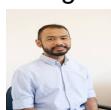
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Name _____ Class _____ K. Barlow _____ Date _____

Skills Worksheet CONNECTION TO SOCIAL STUDIES

Cross-Disciplinary

Incandescent Light Bulbs

Read the following paragraphs, and complete the exercises below.

In 1752, Ben Franklin with his kite experiment demonstrated that lightning is related to electricity. In pennance to understand electricity conduction, and many electric devices were invented. In 1879, Thomas Edison invented a source of electric lighting that would eventually bring electric lights into homes. The key to Edison's electric lighting system was the incandescent light bulb.

Incandescent light bulbs are glass bulbs from which all air has been pumped out. The air is replaced with chemically inactive gas, like nitrogen. The glow from an incandescent light bulb comes from the filament, a thin wire, which is often visible inside bulbs. Today, the common material for filaments is tungsten. When electricity flows through the filament of an incandescent bulb, the tungsten wire gets hot enough to glow and give off light. Atoms of tungsten evaporate from the white-hot filament. The escaped tungsten atoms collect on the glass and darken it. Over time, the filament grows thin and eventually breaks.

HALOGEN BULBS

A variation of the incandescent light bulb is the halogen bulb. Gases inside halogen bulbs are chemically active. Each time a tungsten atom leaves the filament, halogen molecules inside the glass pick it up and return to the filament. Recapturing the tungsten atoms back on the filament allows the filament to last longer. These halogen molecules can do this job only if the glass of the bulb is allowed to get extremely hot—much hotter than incandescent bulbs get.

EXERCISES

1. Which type of light bulb, ordinary incandescent or halogen, would last longer? Explain your answer.

2. What causes the tungsten atoms to evaporate from the filament?

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