Name: _____ Date: _____

How Glow-in-the-Dark Stars Save Up Light

Circle group

Stick a few plastic stars on your bedroom ceiling. You may see something odd. In a bright room, they look pale and plain. Turn off the lights. After a short wait, they glow with a soft green light. Where does the light come from? The stars have no battery or plug.

The stars are coated with a special material called a phosphor. A phosphor can take in light energy and hold it for a while. When light shines on the stars, the phosphor takes in some energy. Then it does not send it all out at once. It lets it go slowly as a faint glow. This kind of glow is called phosphorescence.

This explains what you may have seen. The glow is brightest right after the lights go out. Then it slowly fades, because the stored energy is running down. A star that sat in a dark closet all day will hardly glow. It had nothing to save. A few minutes under a bright lamp will charge it up again. So the same star can glow night after night.

The idea has other uses. Some exit signs and path markers glow without power. People can find their way in the dark. The stars only give back light they got first. They do not make new energy of their own.

Questions

1. What are the glow-in-the-dark stars coated with?

_____

_____

2. What does a phosphor do with light energy?

_____

_____

3. Why does the glow slowly fade after the lights go out?

_____

_____

4. How can you charge a star up again?

_____

_____

5. Why would a star from a dark closet hardly glow?

_____

_____

6. What is one use for this idea besides decorations?

_____

_____

Words to know

phosphor: a material that stores light and glows afterward
phosphorescence: a glow that lasts after the light has gone
fades: slowly gets weaker or dimmer
charge: to fill up with energy

Talk together (every group has these)

1. Find one fact that every group read. How did your sheet say it?
2. What did your sheet tell you that you think another group's did not? Ask them.
3. What is one question about this topic that none of the sheets answered?

Name: _____ Date: _____

How Glow-in-the-Dark Stars Save Up Light

Triangle group

Stick a few plastic stars on your bedroom ceiling and you may notice something odd. In a bright room they look pale and plain. Turn off the lights, and after a short wait they glow with a soft green light. Where does that light come from, since the stars have no battery or plug?

The stars are coated with a special material called a phosphor. A phosphor can absorb light energy and hold onto it for a while. When light shines on the stars, the phosphor takes in some of the energy. Then, instead of sending it out all at once, the material lets it go slowly as a faint glow. This kind of glow is called phosphorescence.

That explains several things you may have noticed. The glow is brightest right after the lights go out and slowly fades, because the stored energy is running down. A star that sat in a dark closet all day will hardly glow at all, since it had nothing to save. A few minutes under a bright lamp will charge it up again, so the same star can glow night after night.

The idea is used for more than decorations. Some exit signs and path markers glow without power so people can find their way in the dark. Remember that the stars are only giving back light they first received. They do not make any new energy of their own.

Questions

1. What are the glow-in-the-dark stars coated with?

_____

_____

2. What does a phosphor do with light energy?

_____

_____

3. Why does the glow slowly fade after the lights go out?

_____

_____

4. How can you charge a star up again?

_____

_____

5. Why would a star that sat in a dark closet all day hardly glow?

_____

_____

6. What is one use for this idea besides decorations?

_____

_____

Words to know

phosphor: a material that stores light and glows afterward
absorb: to soak up or take in
phosphorescence: a glow that lasts after the light has gone
fades: slowly gets weaker or dimmer
charge: to fill up with energy

Talk together (every group has these)

1. Find one fact that every group read. How did your sheet say it?
2. What did your sheet tell you that you think another group's did not? Ask them.
3. What is one question about this topic that none of the sheets answered?

Name: _____ Date: _____

How Glow-in-the-Dark Stars Save Up Light

Square group

Stick a few plastic stars onto your bedroom ceiling and you may notice something rather odd. In a brightly lit room, they look pale and unremarkable. Turn off the lights, and after a short wait they begin to glow with a soft green light. Where does that light come from, given that the stars have neither a battery nor a plug?

The stars are coated with a special material called a phosphor. A phosphor can absorb light energy and hold onto it for a while. When light shines on the stars, the phosphor takes in some of that energy. Then, instead of sending it out all at once, the material releases it gradually as a faint glow. This kind of glow is called phosphorescence.

That explains several things you may have observed. The glow is brightest right after the lights go out and slowly fades, because the stored energy is gradually running down. A star that sat in a dark closet all day will hardly glow at all, since it never had anything to save. A few minutes under a bright lamp will charge it up again, so the same star can glow night after night.

The idea is used for far more than decorations. Some exit signs and path markers glow without any power so that people can find their way in the dark. It is worth remembering that the stars are only giving back light they first received. They do not create any new energy of their own.

Questions

1. What are the glow-in-the-dark stars coated with?

_____

_____

2. What does a phosphor do with light energy?

_____

_____

3. Why does the glow slowly fade after the lights go out?

_____

_____

4. How can a person charge a star up again?

_____

_____

5. Why would a star that sat in a dark closet all day hardly glow?

_____

_____

6. What is one use for this idea beyond decorations?

_____

_____

Words to know

phosphor: a material that stores light and glows afterward
absorb: to soak up or take in
phosphorescence: a glow that lasts after the light has gone
fades: slowly gets weaker or dimmer
charge: to fill up with energy

Talk together (every group has these)

1. Find one fact that every group read. How did your sheet say it?
2. What did your sheet tell you that you think another group's did not? Ask them.
3. What is one question about this topic that none of the sheets answered?

For the teacher: How Glow-in-the-Dark Stars Save Up Light

Each student sheet carries a shape, not a level. The same topic and facts, written three ways.

Circle: How Glow-in-the-Dark Stars Save Up Light

Easier · 220 words · Flesch-Kincaid grade 2.5

1. A special material called a phosphor.
2. It takes in the energy and lets it go slowly as a faint glow.
3. The stored energy is running down.
4. Put it under a bright lamp for a few minutes.
5. It never took in light, so it had no energy to give back.
6. Exit signs and path markers that glow without power.

Triangle: How Glow-in-the-Dark Stars Save Up Light

This passage · 236 words · Flesch-Kincaid grade 5.1

1. A special material called a phosphor.
2. It absorbs the energy and lets it go slowly as a faint glow.
3. The stored energy is running down.
4. Hold it under a bright lamp for a few minutes.
5. It never took in any light, so it had no energy stored to give back.
6. Exit signs and path markers that glow without power.

Square: How Glow-in-the-Dark Stars Save Up Light

Harder · 250 words · Flesch-Kincaid grade 6.2

1. A special material called a phosphor.
2. It absorbs the energy and releases it gradually as a faint glow.
3. The stored energy is gradually running down.
4. By holding it under a bright lamp for a few minutes.
5. It never took in any light, so it had no stored energy to give back.
6. Exit signs and path markers that glow without any power.