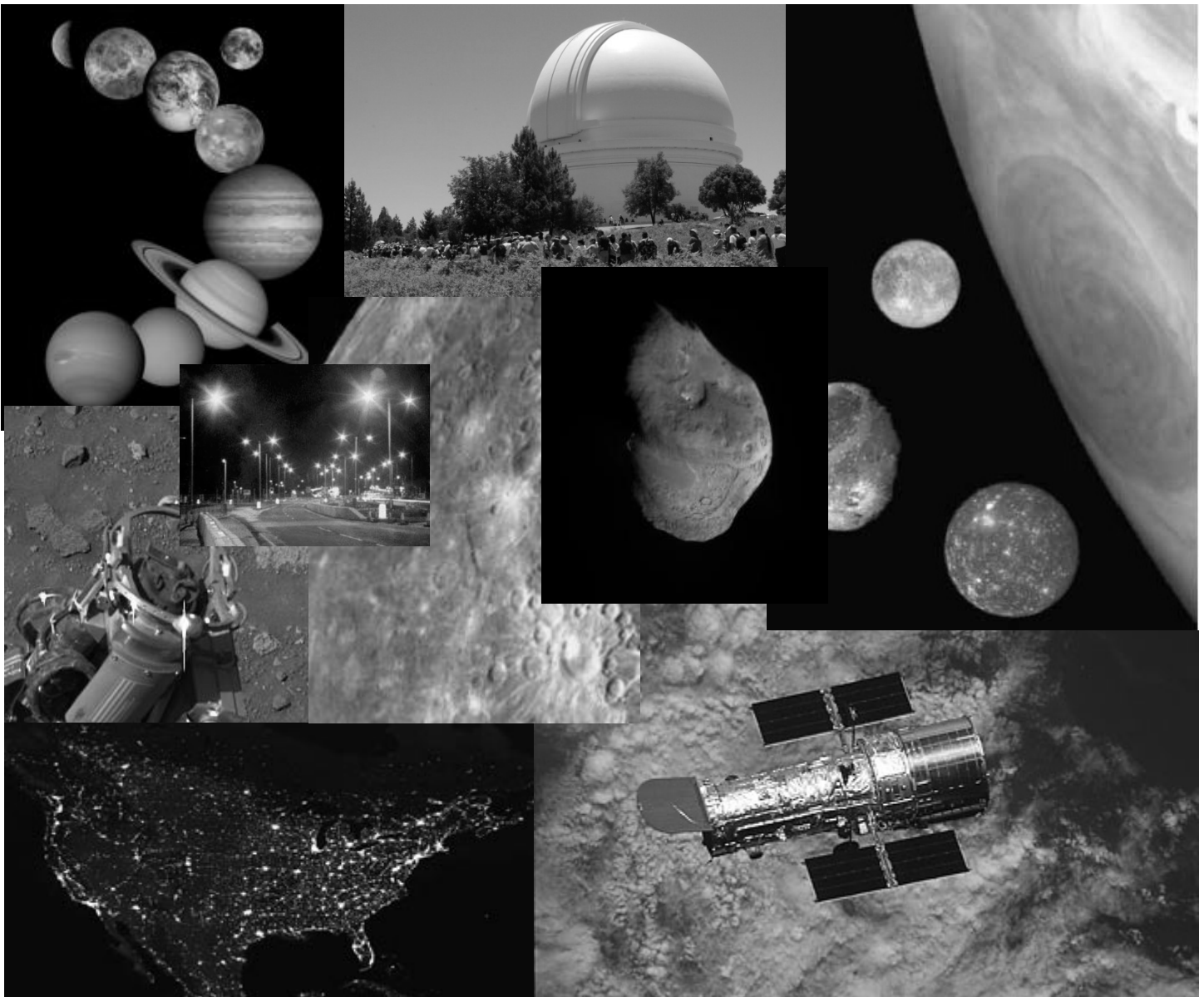


# The Solar System

## What We All Need to Know

Discovering the effects light pollution has on the study of astronomy



# Astronomy Word Search

G L A R E T U T E L E S C O P E H J B N B F J L  
 K I H U B B L E S P A C E T E L E S C O P E R O  
 X G A L A X Y E Q V J I L U R I P F S C B M V V  
 E H E E Y I P D L A P L E G O D I A M E T E R T  
 H T E D X O I F A S R A M X S W V H Y E N Q G E  
 A P L U T O P K R A D W E A I A M H I U P S F M  
 S O R R T Y X J F T Z L N P O R G F S R C O H O  
 T L L A D W Y U L U F G T I N F I H W T V L M C  
 E L S N L F A P A R C X S K C P P T S X D A I N  
 R U J U R N S U R N K J F L H L J D E U B R C G  
 O T X S L O T L E G E U B D U A K I Y C C S B N  
 I I T C N D R F J K D W Q H B N M S C A L Y B I  
 D O F I Y U O F B M D J R T I E O K D T E S Y T  
 S N E P T U N E C X S F J R U T I I A M L T B H  
 P T J H M A O K Q P Y I F A N P A V S O M E S G  
 W P A O V J M O A M E U O E S N K S F S H M T I  
 I E W T I O Y R U C R E M Q R P A Y U P C X B L  
 L P Y O U F D J M I Y N S H E M I S P H E R E L  
 D P E S K Y G L O W O G Y D S W J V J E P F N A  
 L C Z P Q K H C B R M T J U I S X K M R W G O I  
 I F R H O L J C I B H D T J O O B J R E T A R C  
 F W T E G J F V N M L J T Y J G R K O H F U B I  
 E C H R T Y N F X B J I O E H B F O U I X N P F  
 G R W E I E J O H Q A J M N D R E Y E P A B J I  
 H T L E B R E P I U K S R H N V I S R T G R U T  
 P G D R R M U J B E W A R E T I P U J B E P U R  
 R E T R O G R A D E R O T A T I O N P T Y M D A

## Astronomy

Pluto  
 Earth  
 Uranus  
 Neptune  
 Dwarf planet  
 Venus  
 Mercury  
 Mars  
 Jupiter  
 Saturn  
 Hubble Space  
 Telescope

## Sun

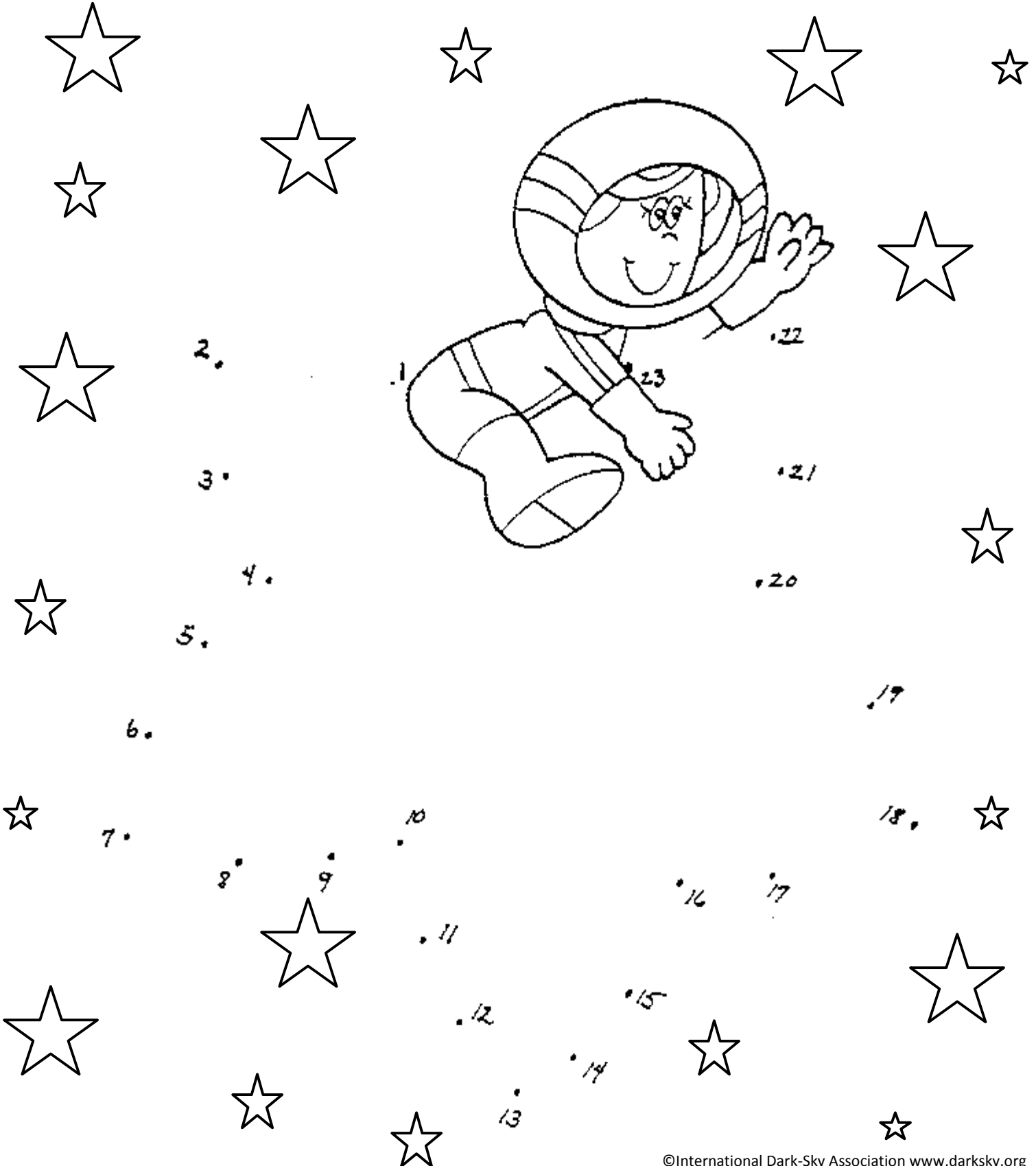
Solar System  
 Light Pollution  
 Glare  
 Kuiper Belt  
 Asteroids  
 Comet  
 Meteoroids  
 Atmosphere  
 Mass  
 Diameter  
 Photosphere  
 Elements

## Erosion

Orbit  
 Telescope  
 Crater  
 Hemisphere  
 Galaxy  
 Sky glow  
 Artificial Lighting  
 Environment  
 Wildlife  
 Circadian rhythm  
 Solar flare  
 Retrograde rotation

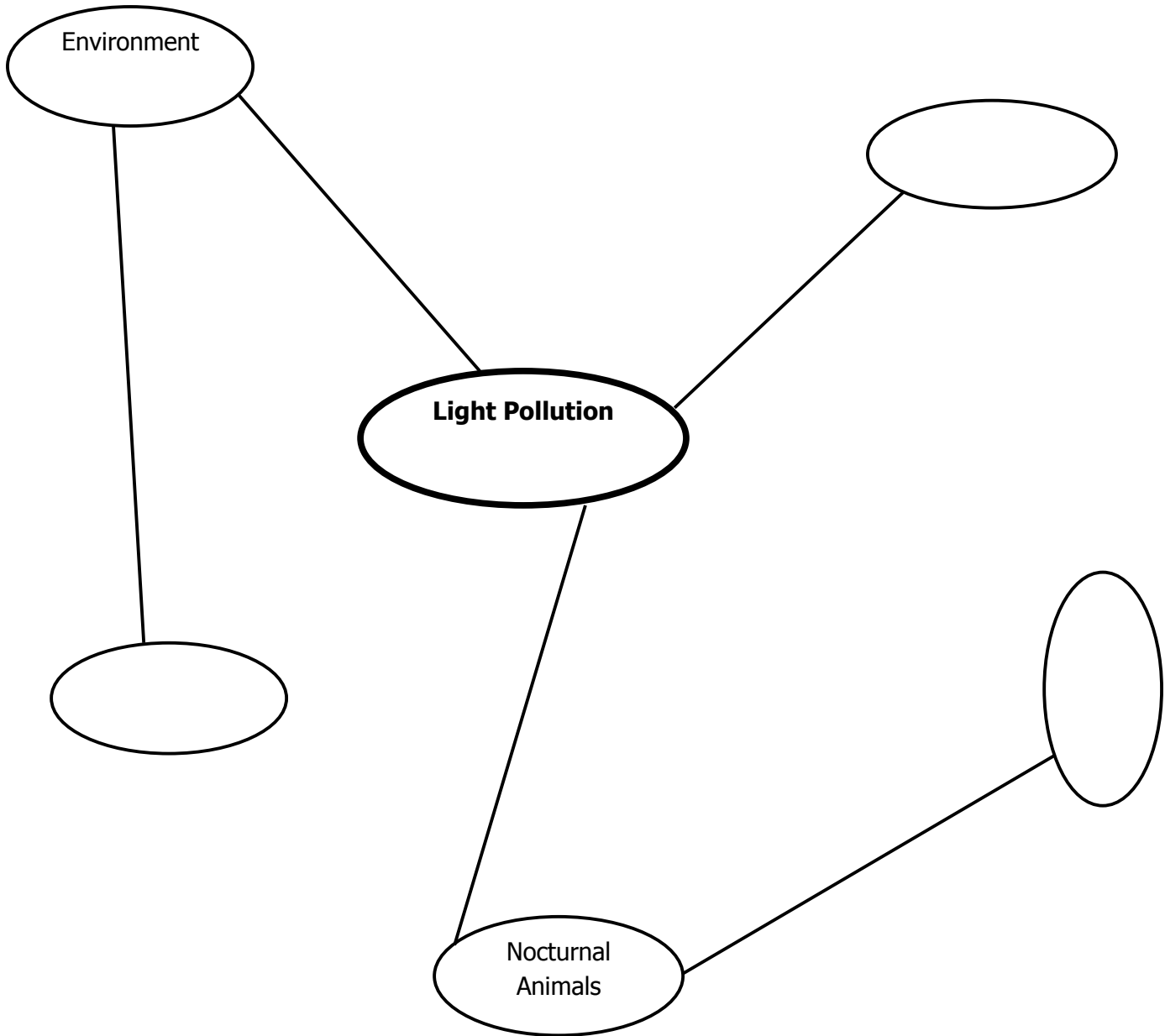
# Connect The Dots!

As we learn about light pollution, we need to take the time to appreciate the stars and think about what the world would be like if we could no longer see them!



# What a Waste of Light!

When people talk about the effects of light pollution, what are they talking about? Are they talking about the effects on the environment and animals? Are they talking about people's health? What about astronomy and being able to see the stars? Or is it all of these things plus more? Brainstorm some ideas about what light pollution is, and what we can do to prevent it. I've started some ideas for you. Fill in the blanks and create your own!

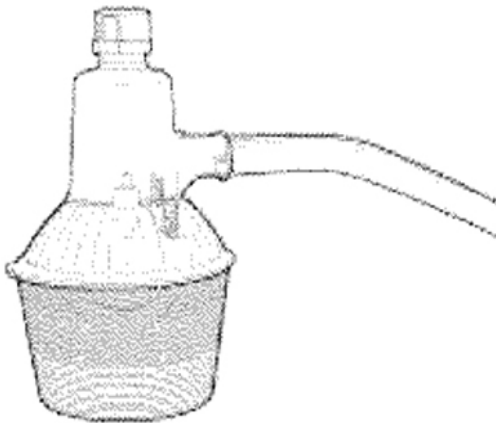


# Good Light or Bad Light?

The best kind of lighting fixture is called fully-shielded. This means it cuts off any light from shining up into the sky. It does this by creating a solid barrier that only allows the light to shine onto the ground where it is needed. The picture to the right is a great example of a good lighting fixture! Look at figures A, B, and C below. Check "YES" if it is a good lighting fixture, or check "NO" if it is not.



**A.**



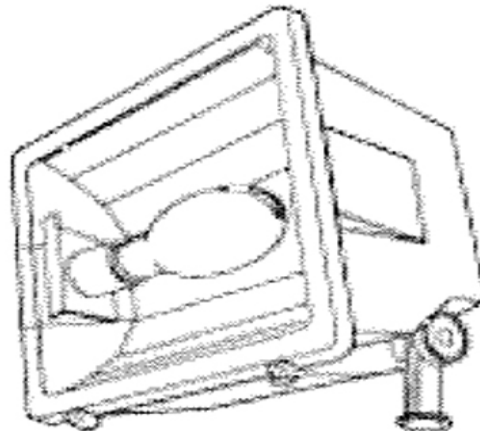
YES

NO

YES

NO

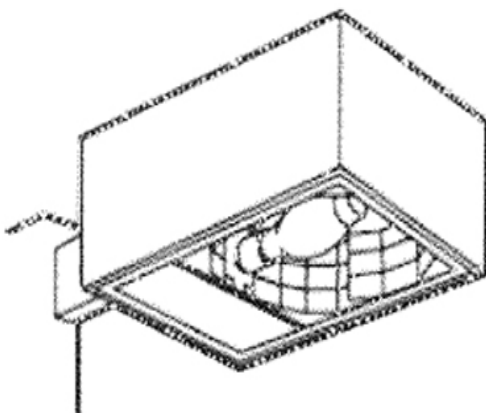
**B.**



YES

NO

**C.**

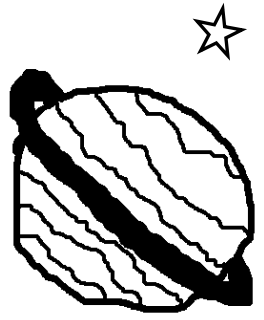


YES

NO

**Hint:** Good lighting protects our night environment from light pollution by using fixtures that shine light onto the ground because they are full cutoff or shielded fixtures.

# Break the Code!!



Let's have some fun.

Use the code provided and decode the secret messages below.

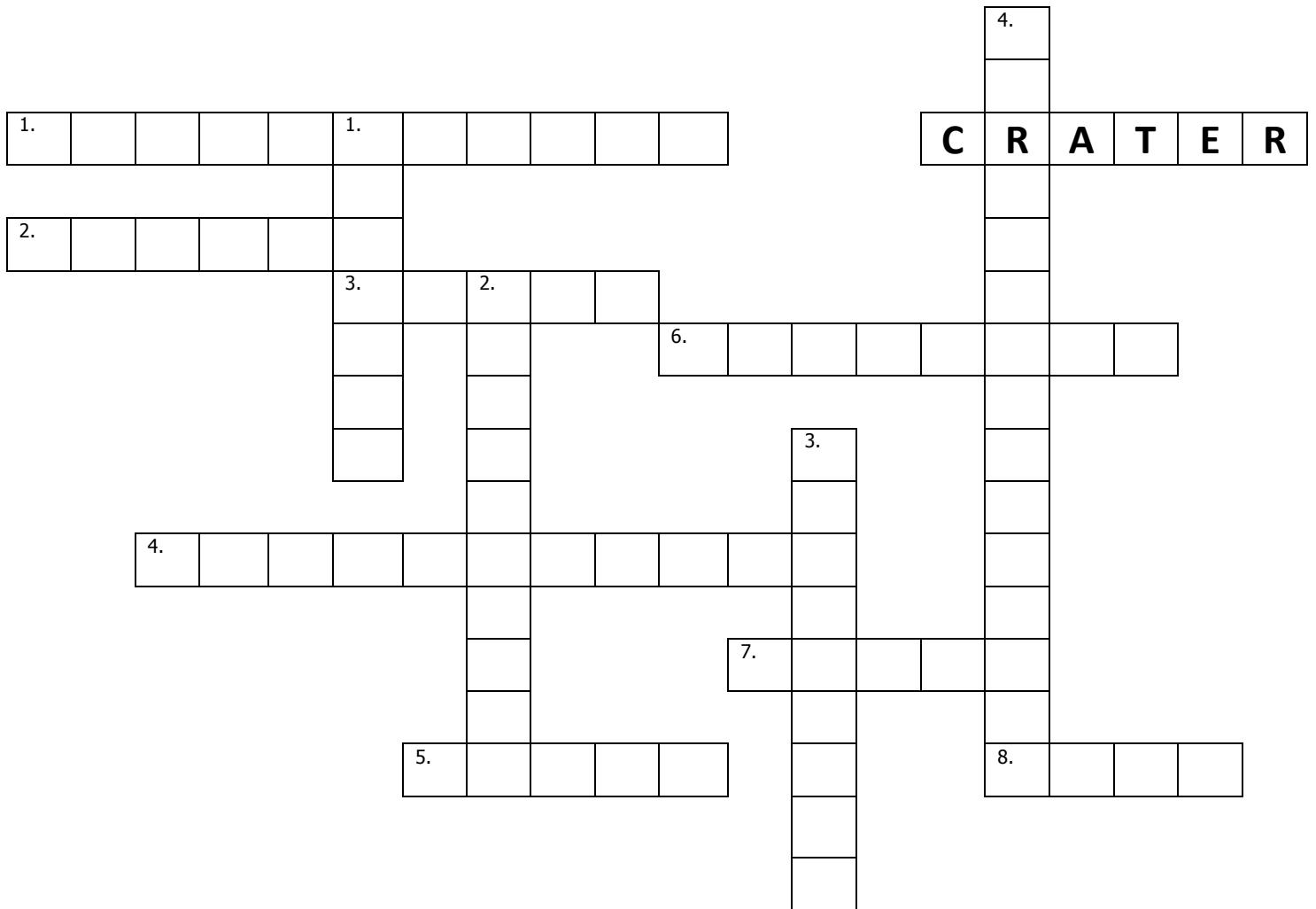
A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
		P	Q	R	S	T	U	V	W	X	Y	Z		
		16	17	18	19	20	21	22	23	24	25	26		

1.)    —    —    —    —    —    —    —    —    —    —    —    —    —    —    —  
       13   1   18   19        9   19        11   14   15   23   14        1   19  
   —    —    —    —    —    —    —    —    —    —    —    —    —    —    —  
 20   8   5        18   5   4        16   12   1   14   5   20

2.)    —    —    —    —    —    —    —    —    —    —    —    —    —    —  
       10   21   16   9   20   5   18        9   19        20   8   5  
   —    —    —    —    —    —    —    —    —    —    —    —    —    —  
 12   1   18   7   5   19   20        16   12   1   14   5   20        9   14  
   —    —    —    —    —    —    —    —    —    —    —    —    —    —  
 20   8   5        19   15   12   1   18        19   25   19   20   5   13

3.)    —    —    —    —    —    —    —    —    —    —    —    —    —    —  
       3   15   13   5   20   19        1   18   5        15   6   20   5   14  
   —    —    —    —    —    —    —    —    —    —    —    —    —    —  
 18   5   6   6   5   18   5   4        20   15        1   19  
   —    —    —    —    —    —    —    —    —    —    —    —    —    —  
 1        4        9   18   20   25        19   14   15   23   2   1   12   12   19

# Crossword Puzzle



## Across:

1. The \_\_\_\_\_ includes the sun, planets, comets, meteoroids, asteroids, and dwarf planets, which are all in proximity to the sun. (two words)
2. A collection of stars that orbit around a common center point.
3. An intense and blinding halo of light that causes you to squint.
4. This is the new classification of Pluto. (two words)
5. The second planet from the sun.
6. All \_\_\_\_\_ need both daylight and darkness for normal functioning.
7. The path that an object in space follows around another object.
8. The red planet.

## Down:

1. A brightening of the night sky by manmade outdoor lighting that blocks the view of the stars.
2. The gases surrounding an object in space, such as the air surrounding Earth.
3. A rock that orbits the sun in the solar system but is too small to be considered a planet.
4. The natural internal, 24 hour clock that human and other creatures have. (two words)

### Word List:

Solar system, Venus, circadian rhythm, galaxy, glare, sky glow, dwarf planet, orbit, asteroids, Mars, atmosphere

# That is Astronomical!

If you could live on any planet, which would it be and why? Why do you think this is a good planet to live on? How would you help prevent light pollution on your new planet? \_\_\_\_\_

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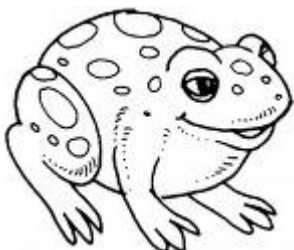
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List 5 other animals that are influenced by light pollution:

- 1.
- 2.
- 3.
- 4.
- 5.



Why do you think it is important we help keep these animals healthy?

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What can you do to help keep all animals safe and healthy?

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# Think Logically!

Look at the logic chart below. Next to each planet put a check mark under the characteristics that accurately describe them.



	Has Craters	Has Water (Liquid/Ice)	Larger Than Earth	Has Rings	Has Active Storms	Is a Gas Planet
Mercury						
Venus						
Earth						
Mars						
Jupiter						
Saturn					✓	
Uranus						
Neptune						
Pluto						