GRID & SILICON
Student sheet

Fiber Optic Cables: Sending Data with Light

Name _____ Date _____

Keep the explainer beside you. Look back for every answer.

Warm-ups

Warm-up A

What does a fiber optic cable carry instead of electricity? (write or draw)

Warm-up B

What happens to light pulses on a very long trip? (write or draw)

Word of the Week

Reflect: To bounce back from a surface, like light off a mirror.

Use it in a sentence: _____

Stuck on a word? Open the Glossary: gridandsilicon.com/glossary/

Part 1: Circle the best answer

1. What carries information inside a fiber optic cable?

A. Light pulses
B. Water
C. Air

2. Which part turns electrical signals into light pulses?

A. Receiver
B. Laser
C. Cladding

3. Where does the light travel inside a fiber?

A. In the core
B. Around the outside of the cable
C. Only inside the receiver

4. Light hits the edge of the core. What does the cladding do?

A. Soaks up all of the light
B. Makes the light reflect back into the core
C. Turns the light into electricity

5. In the simplest code, a flash means 1. What does no flash mean?

A. 0
B. 2
C. 10

6. After a long trip, the light pulses are weak. Which part makes them strong again?

A. Amplifier
B. Receiver
C. Cladding

7. Which part turns light pulses back into electrical signals?

A. Laser
B. Receiver
C. Core

8. Why do long links between data centers use fiber instead of copper wire?

A. Fiber's signal stays strong over longer distances
B. Fiber is made of copper
C. Fiber does not need a laser

9. Light in glass travels about 200,000 kilometers each second. About how long does it take to cross a 2,000-kilometer cable?

A. 1 second
B. One tenth of a second
C. One hundredth of a second

Part 2: Fill in the blanks

Use each word once.

Word bank: core · cladding · receiver

1. Light travels through the _____ of the fiber.

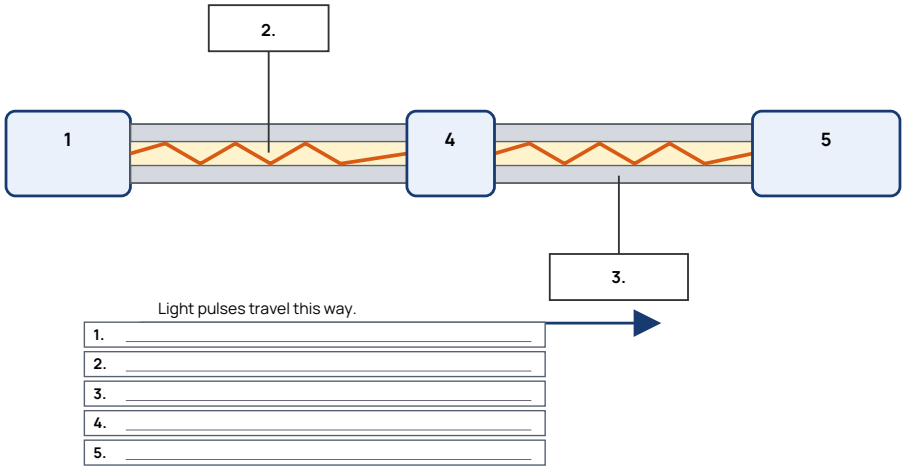
2. The _____ makes light reflect back into the core.

3. The _____ turns light pulses back into electrical signals.

Part 3: Label the diagram

Use the word bank to fill each numbered space.

Laser · Core · Cladding · Amplifier · Receiver



Part 4: Think about it

1. You and a friend send messages across a dark yard with a flashlight. A flash means 1 and no flash means 0. How is this like a fiber optic cable? Which part of the cable is your friend?

2. A school wants a fast link between two buildings far apart. Would you pick copper wire or fiber? Use one fact from the explainer.

Vocabulary Word Search

Find the words across, down or diagonally, reading forward.

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

- ☐ FIBER
- ☐ GLASS
- ☐ LIGHT
- ☐ LASER
- ☐ CORE
- ☐ CLADDING
- ☐ REFLECT
- ☐ SIGNAL
- ☐ RECEIVER
- ☐ AMPLIFIER