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## TRAINS & RAILROADS (1)

Do **THREE** of the following:

a. Name three types of modern freight trains.

- 1) \_\_\_\_\_
- 2) \_\_\_\_\_
- 3) \_\_\_\_\_

Explain why unit trains are more efficient than mixed freight trains. \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_



● [http://www.railroaddata.com/rrlinks/Freight\\_Railroads/Class\\_1/](http://www.railroaddata.com/rrlinks/Freight_Railroads/Class_1/)

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\_\_\_\_\_

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# RAILROADING

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

- |             |           |            |             |
|-------------|-----------|------------|-------------|
| AMTRAK      | CROSSING  | FREIGHT    | REEFER      |
| APPROACHING | DEPARTURE | GRADE      | SAFETY      |
| ARRIVAL     | DIESEL    | LIFESAVER  | SWITCHING   |
| BRAKEMAN    | ENGINE    | LOCOMOTIVE | TIMETABLE   |
| CABOOSE     | ENGINEER  | MODEL      | TRAIN       |
| CARS        | EOTD      | PASSENGER  | TRESPASSING |
| COMMODITIES | FLAGMAN   | PLATFORM   | WHISTLE     |
| CROSSBUCKS  | FRED      | RAILROAD   |             |

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G K A R T M A F S S N R R E T  
 E N J O O I R W K A N A E V I  
 L O I D A E I C M A C I E I M  
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 H T I S R L O D D P G A N O B  
 W N O B F D T R A I N D E C L  
 G R G N I S S A P S E R T O E  
 C D Y T E F A S H P D S D L S  
 A S I T F E R U T R A P E D O  
 R E P A S S E N G E R T R L O  
 S L I F E S A V E R G R F V B  
 G N I S S O R C L A V I R R A  
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- |             |           |            |             |
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| COMMODITIES | FLAGMAN   | PLATFORM   | WHISTLE     |
| CROSSBUCKS  | FRED      | RAILROAD   |             |

**b. Railfanning**

With your parent's and counselor's approval, do **TWO** of the following:

Visit a railroad museum, historical display, or a prototype railroad-sponsored public event. With permission, photograph, videotape, or sketch items of interest. Explain what you saw and describe your photos, sketches, or videotape.

Purchase tickets and ride a scenic or historic railroad. Under supervision, photograph the equipment and discuss with your counselor the historic significance of the operation.

Locate the Web site of four rail historical groups, then find information on the history of the rail preservation operations and purpose of each group. Talk with a member of one of the groups and find out how you might help.

Plan a trip by rail between two points. Obtain a schedule and explain when the train should arrive at two intermediate points. Purchase the tickets and make the trip. Explain to your counselor what you saw.

b. Name one Class I or regional railroad.

What major cities does it serve? \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

What are the locations of its:

major terminals \_\_\_\_\_

\_\_\_\_\_

service facilities \_\_\_\_\_

\_\_\_\_\_

crew change points \_\_\_\_\_

\_\_\_\_\_

the major commodities it carries \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Freight railroads in the United States are classified by the Association of American Railroads as **Class I**, **Class II** and **Class III** in terms of size...by means of annual operating revenue...

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Freight railroads in the United States are classified by the Association of American Railroads as **Class I**, **Class II** and **Class III** in terms of size...by means of annual operating revenue...

□ c. Using models or pictures, identify 10 types of railroad freight or passenger cars. Explain the purpose of each type of car.

Car 1 \_\_\_\_\_

Purpose \_\_\_\_\_

Car 2 \_\_\_\_\_

Purpose \_\_\_\_\_

Car 3 \_\_\_\_\_

Purpose \_\_\_\_\_

Car 4 \_\_\_\_\_

Purpose \_\_\_\_\_

Car 5 \_\_\_\_\_

Purpose \_\_\_\_\_



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Car 2 \_\_\_\_\_

Purpose \_\_\_\_\_

Car 3 \_\_\_\_\_

Purpose \_\_\_\_\_

Car 4 \_\_\_\_\_

Purpose \_\_\_\_\_

Car 5 \_\_\_\_\_

Purpose \_\_\_\_\_



□ 5. Build one railroad structure (from scratch or using a kit), paint and weather the structure, mount it on your layout or diorama, and make the surrounding area on a diorama scenic.



□ 6. Alone or with others, build a model railroad or modular layout, including ballast and scenery. Make electrical connections and operate a train. Describe what you enjoyed most.

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

□ 7. Participate in a switching contest on a timesaver layout and record your time.

□ 5. Build one railroad structure (from scratch or using a kit), paint and weather the structure, mount it on your layout or diorama, and make the surrounding area on a diorama scenic.



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\_\_\_\_\_

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**MODELING / RAILFANNING (8)**

Select **ONE** of the following special-interest areas (8a or 8b) and complete two of their requirements:

**a. Model Railroading**

With your parent's and counselor's approval, do **TWO** of the following:

1. Draw a layout of your own model railroad; or one that could be built in your home. Design a point-to-point track or loop with different routings. Include one of the following: turnaround or terminal or yard or siding.

2. Build one model railroad car kit or one locomotive kit.

3. Name the scale of four popular model railroad gauges. Identify the scale of four model cars or locomotives.

\_\_\_\_\_

\_\_\_\_\_

4. Locate the Web site of four model railroad - related manufacturers or magazine publishers. Print information on their products and services and discuss the information with your counselor.

Car 6 \_\_\_\_\_

Purpose \_\_\_\_\_

Car 7 \_\_\_\_\_

Purpose \_\_\_\_\_

Car 8 \_\_\_\_\_

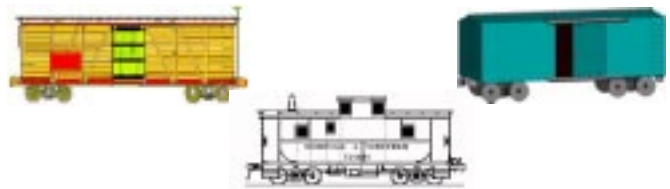
Purpose \_\_\_\_\_

Car 9 \_\_\_\_\_

Purpose \_\_\_\_\_

Car 10 \_\_\_\_\_

Purpose \_\_\_\_\_



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Car 8 \_\_\_\_\_

Purpose \_\_\_\_\_

Car 9 \_\_\_\_\_

Purpose \_\_\_\_\_

Car 10 \_\_\_\_\_

Purpose \_\_\_\_\_



□ d. Explain how a modern diesel or electric locomotive develops power.

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Explain the following terms:

dynamic braking

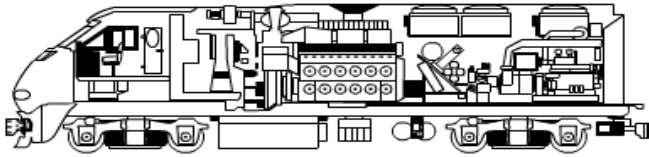
\_\_\_\_\_

\_\_\_\_\_

radial steering trucks

\_\_\_\_\_

\_\_\_\_\_



● <http://travel.howstuffworks.com/diesel-locomotive4.htm>

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\_\_\_\_\_

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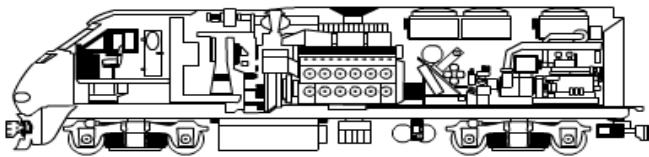
\_\_\_\_\_

\_\_\_\_\_

radial steering trucks

\_\_\_\_\_

\_\_\_\_\_



● <http://travel.howstuffworks.com/diesel-locomotive4.htm>

Explain the use and function of EOTD or FRED used on the last car of most trains.

**FRED stands for**

(HINT: signhlaf rrae den vedcie)

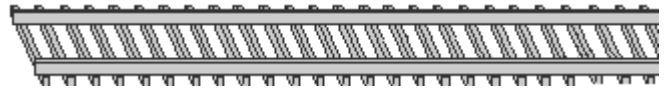
A blinking red light on the last car of the train.



**EOTD stands for**

(HINT: den fo nrtia vedcie)

An updated FRED that also monitors air pressure in the brake line at the back of the train and signals that reading to the engineer in the cab.



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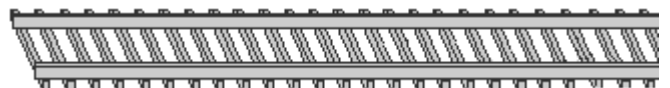
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## USING RAIL (2)

a. Explain the purpose & formation of Amtrak.

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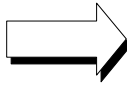
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By the use of a timetable, plan a trip by rail between two cities at least 500 miles apart. On the following page, list the times of departure and arrival at your destination, the train number, and the type of service you want.

● <http://www.amtrak.com/servlet/ContentServer?pagename=Amtrak/HomePage>



b. List and explain the various forms of public/mass transit using rail as the fixed guide path.

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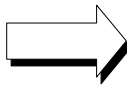
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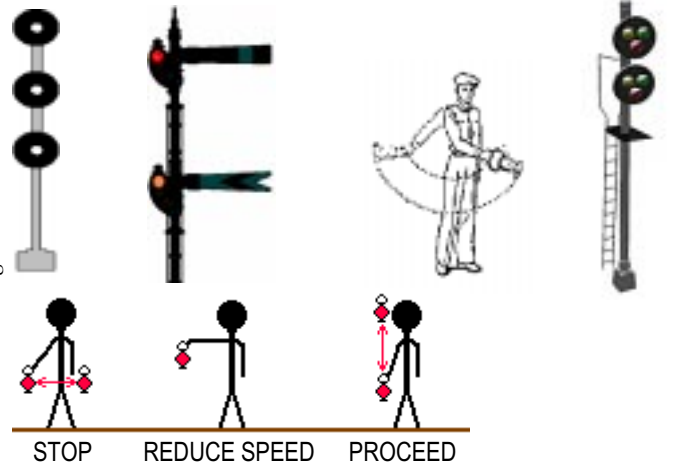
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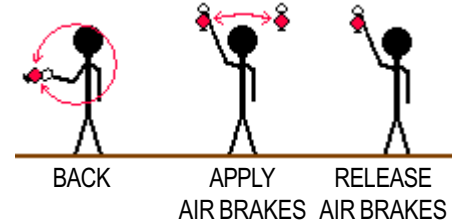
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## RAIL SIGNALS (7)

□ Explain how railroad signals operate and show two basic signal types using color and configuration.

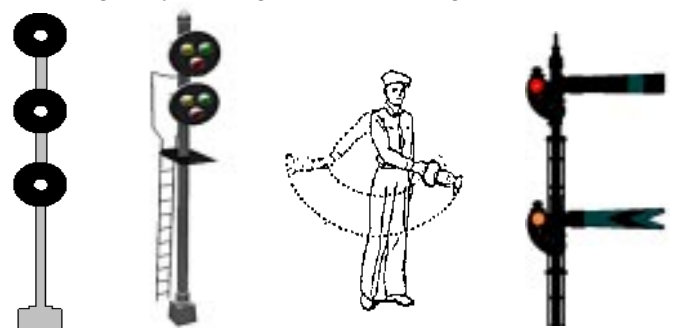


● <http://www.spikesys.com/Trains/handsig.html>



## RAIL SIGNALS (7)

□ Explain how railroad signals operate and show two basic signal types using color and configuration.



□ Explain the meaning of three whistle signals. (In the chart below, “.” means a short whistle and “\_” means long.)

- Apply Brakes - Stop
- — Release Brakes - Proceed
- • • ~ Flagman go back, protect rear of train
- • • — Protect front of train
- — • — Approaching highway crossing at grade
- Approaching stations, junctions, crossings
- • • • • A number of short toots is an alarm for persons or livestock on the track.



**RAIL OPPORTUNITIES (3)**

Do ONE of the following:

Name four departments of a railroad company. Describe what each department does.

Dept 1 \_\_\_\_\_

Purpose \_\_\_\_\_

Dept 2 \_\_\_\_\_

Purpose \_\_\_\_\_

Dept 3 \_\_\_\_\_

Purpose \_\_\_\_\_

Dept 4 \_\_\_\_\_

Purpose \_\_\_\_\_

Tell about the opportunities in railroading that interest you most and why.

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Tell what an automobile driver can do to safely operate a car at grade crossings, and list three things an automobile driver should never do at a grade crossing.

\_\_\_\_\_  
\_\_\_\_\_

1) \_\_\_\_\_

2) \_\_\_\_\_

3) \_\_\_\_\_

Tell how to report a malfunction of grade crossing warning devices.

\_\_\_\_\_  
\_\_\_\_\_

List safety precautions a pedestrian should follow at a public crossing.

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

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\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

☐ Explain to your merit badge counselor why railroad rights-of-way are important for safety.

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

☐ List 10 safety tips to remember when you are near a railroad track (either on the ground or on a station platform) or aboard a train.

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

☐ Tell your counselor about the guidelines for conduct that should be followed when you are near or on railroad property. Explain the dangers of trespassing on railroad property.

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

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\_\_\_\_\_  
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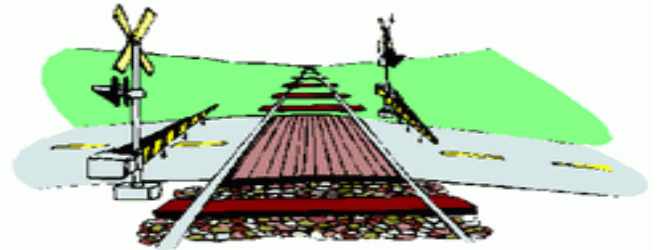
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

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\_\_\_\_\_  
\_\_\_\_\_

☐ Name four rail support industries, Describe the function of each one.

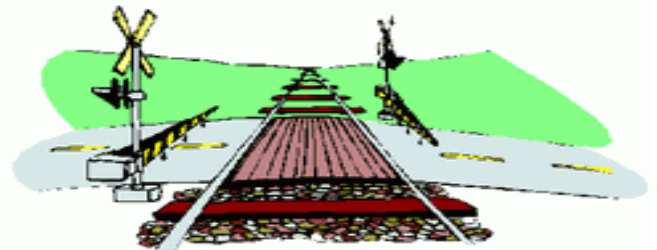
Ind 1 \_\_\_\_\_  
Function \_\_\_\_\_  
Ind 2 \_\_\_\_\_  
Function \_\_\_\_\_  
Ind 3 \_\_\_\_\_  
Function \_\_\_\_\_  
Ind 4 \_\_\_\_\_  
Function \_\_\_\_\_



**FYI: Crossing signals usually have a 1-800 number posted on or near the signal in case of malfunction.**

☐ Name four rail support industries, Describe the function of each one.

Ind 1 \_\_\_\_\_  
Function \_\_\_\_\_  
Ind 2 \_\_\_\_\_  
Function \_\_\_\_\_  
Ind 3 \_\_\_\_\_  
Function \_\_\_\_\_  
Ind 4 \_\_\_\_\_  
Function \_\_\_\_\_



**FYI: Crossing signals usually have a 1-800 number posted on or near the signal in case of malfunction.**

With your parent's and counselor's approval, interview someone employed in the rail industry.

(Name) \_\_\_\_\_

What do they do? \_\_\_\_\_

\_\_\_\_\_

How did they become interested in railroading?

\_\_\_\_\_

\_\_\_\_\_



What type of schooling and training are required for this position? \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_



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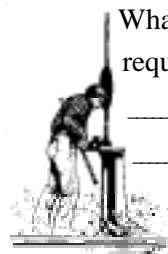
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### OPERATION LIFESAVER (4)



Explain the purpose of Operation Lifesaver and its mission.

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

E \_\_\_\_\_

E \_\_\_\_\_

E \_\_\_\_\_

• [http://www.oli.org/ol\\_basics/mission.html](http://www.oli.org/ol_basics/mission.html)

### SAFETY (5)

Do **THREE** of the following:

List five safety precautions that help make trains safer for workers and passengers.

1) \_\_\_\_\_

2) \_\_\_\_\_

3) \_\_\_\_\_

4) \_\_\_\_\_

5) \_\_\_\_\_

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5) \_\_\_\_\_