

Railroad Safety and You
Distance Learning Program
Railroad Museum of Pennsylvania

Purpose: To demonstrate the importance of railroad safety and the use of signals by the railroads themselves.

Time Frame: 45- 50 minutes

Age Range: Grades 3rd through 6th

Preparation: Teachers may use the enclosed information packet, which features vocabulary, roll cards and an explanation of the crafts needed. Teachers may wish to have children vote on which signs to make: Color Light, Semaphore or Position Light signals. And the signs should be ready in time for the lesson to proceed. The lantern, roll cards, and whistle will also need to be constructed prior to the start of the lesson.

Concepts:

- ✓ A railroad has signals and signs provided for safety just like car would have while driving on a road.
- ✓ The signal signs are very important to the safety of the locomotive crew, passengers and/or freight.
- ✓ Each and every railroad uses different styles of signals--all representing concepts of "stop," "go," and "caution."
- ✓ Railroad traffic is overseen and coordinated by the dispatcher. Much like an air-traffic controller does for airplanes, the railroad dispatcher monitors all train traffic by computers and relays the correct signals to the engineer as needed.

Procedure:

- ✓ Elect at least 6 to 8 children to be two different trains.
- ✓ Elect at least three children to be the Stop, Go and Caution signals.
- ✓ Elect at least two children to be crossing gates.
- ✓ Elect at least two children to be regular passenger cars.
- ✓ Elect at least two children to be the lantern signalers.
- ✓ Elect at least two children to be the whistle signalers.
- ✓ Explain why signals are needed for safety.
- ✓ Identify the different types of signals and how they work. Explain to the children the different signals for *Stop*, *Go* and *Caution* for the light signals; for the lantern explain the *Proceed*, *Stop*, *Back Up* and *Reduce Speed* signals; and for the whistle explain the *Apply Brakes - Stop*, *Release Brakes*, *Approaching a Road Crossing* and *Coming into the Station* signals.
- ✓ Explain the basic history of the evolution of signals from the *Highball* to the *Lantern* to the *Light Signal*.

Vocabulary:

- Fixed Signals:** Like highway signs, they may show speed limits or what lies ahead. The fixed signal shows the speed limit--the top number for a passenger train and the bottom number for a freight train.
- Block Signals:** Control movement in a "block" or zone. No train enters or leaves without the proper signal. They look just like traffic signals for cars.
- ✓ Green means "Go!"
 - ✓ Yellow means "Caution!"
 - ✓ Red means "Stop!"
- Position Signals:** Are a kind of block signal using two or three lights in different positions to indicate stop, approaching, proceed or permissive (to enter the section or block ahead).
- Searchlight Signals:** Emits only one beam of light, which changes color from red to green or to yellow.
- Signalmen:** Install, repair and maintain train control communication and signaling system.
- Stop and Go:** The earliest kind of signal developed was a simple stop or go for trains with in sight. This was before the days of the telegraph, telephone or electric signals. Once a train left a station it was on its own and could only be reached by signals it could see.
- ✓ Red (or black) always means "Danger, Stop!"
 - ✓ In the early days, white meant clear track, "Go Ahead!" Now, green means "Go."
 - ✓ Amber means "Caution!"
- Highball:** A white "ball" at the top of a pole meant that the way was clear. So, "highball" come to mean full speed ahead. Although ball signals are rarely used anymore, "green ball" freight is one that is given clear tracks for speed.
- Semaphores:** Are Stop-and-Go signals with a single arm and usually with colored lights.
- ✓ Arm straight out means "Stop!"
 - ✓ Either up or down means "Go!"
- Railroad Slang:***
- Green Eye:** Clear signal
- Highball:** Signal to move ahead or pick up speed.
- In the Color:** Train waiting signal to proceed.

Paddle: Signal, also called a board.

Red Board: Stop signal.

List of Roll Call Cards:

Car: At the train-crossing gate, you decide to not wait for the train. You cross the tracks causing the train to run into you.

Truck with Space Shuttle: At the train-crossing gate, you stop and wait for the train to pass. Then you may safely cross the tracks.

Locomotive: You obey all of the light signals as you move around the tracks.

Lantern Signaler: You tell the train to:

Go! Move the lantern up and down with your right hand.

Stop! Move the lantern back and forth in front of you with your right hand.

Back Up! Swing the lantern in a big circle with your right hand.

Caution: Slow Down! Hold Lantern straight out with your right hand.

Crossing Gate: You stop the cars from crossing the tracks when a train is coming towards you.

Light Signaler: You give the **Go!** signal to the train when the track is clear.

Light Signaler: You give the **Stop!** signal to the train when the track is not clear of another train.

Light Signaler: You give the **Caution: Slow Down!** signal to the train when train needs to slow down. Either at a crossing gate or when there is another train on the tracks.

Whistle Signaler: You blow the train whistle:

o **STOP!** One loud short blow.

- - o - **Approaching a road crossing**, two longs, a short, and a long.

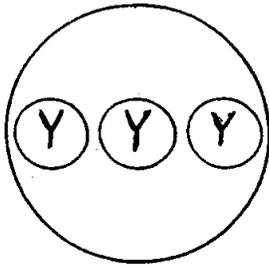
-- **Leaving the station**, two long blows

- School Bus:** You must stop at all train crossings. Open your doors and look both ways to make sure the track is clear.
- Box Car:** You are connected to the engine and are loaded with boxes of Play Stations. You must follow the engine.
- Flat Car:** You are connected to the other freight car and are carrying a helicopter. You must follow the freight car.
- Refrigerator Car:** You are connected to the other freight car and are loaded with ice cream. You must follow the freight car.
- Hopper Car:** You are connected to the refrigerator car and are loaded with sand. You must follow the refrigerator car.
- Tank Car:** You are connected to the other hopper car and are loaded with milk. You must follow the hopper car.
- Caboose:** You are connected to the hopper car and are the end of the train. You must follow the hopper car.
- Locomotive:** You do not obey all of the signals and you run into the other train causing an accident.
- Boxcar:** You are connected to the engine and are carrying boxes of televisions. You must follow the engine.
- Refrigerator Car:** You are connected to the box car and are carrying fruit and vegetables. You must follow the box car.
- Caboose:** You are connected to the refrigerator car and you are the end of the train. You must follow the refrigerator car.

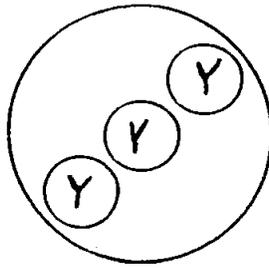
Materials Coloring Guide

* Color all lights YELLOW as indicated.

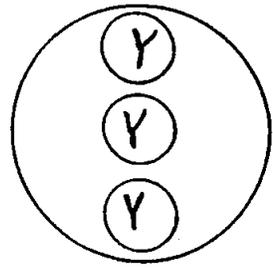
* POSITION
LIGHT
SIGNALS



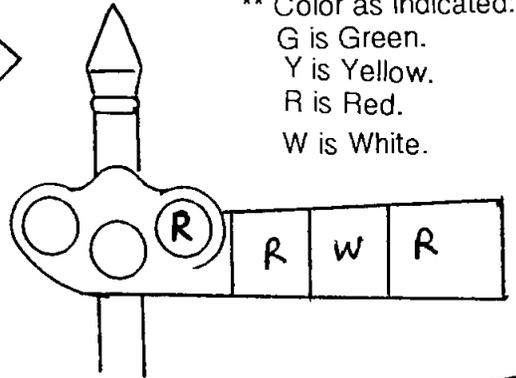
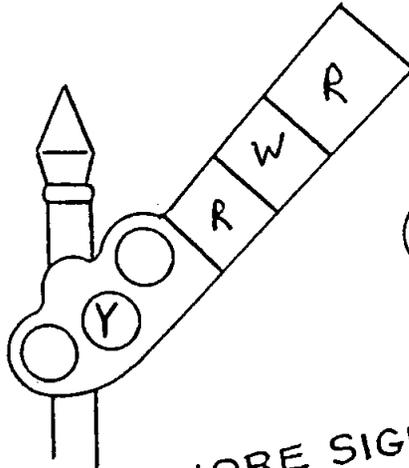
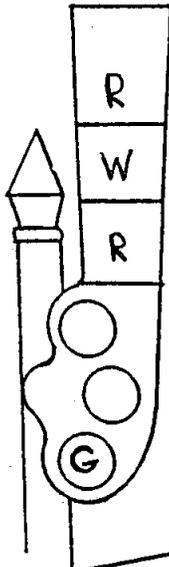
STOP



CAUTION

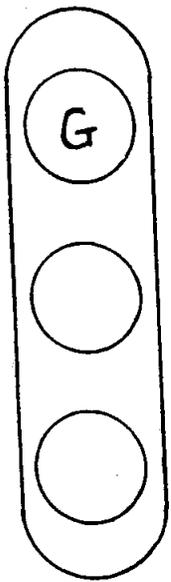


GO

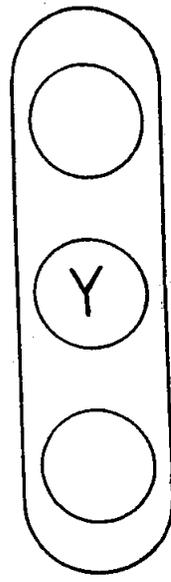


** Color as indicated:
G is Green.
Y is Yellow.
R is Red.
W is White.

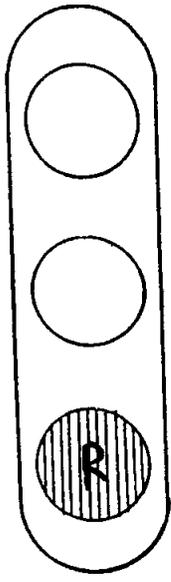
SEMAPHORE SIGNALS**



GO



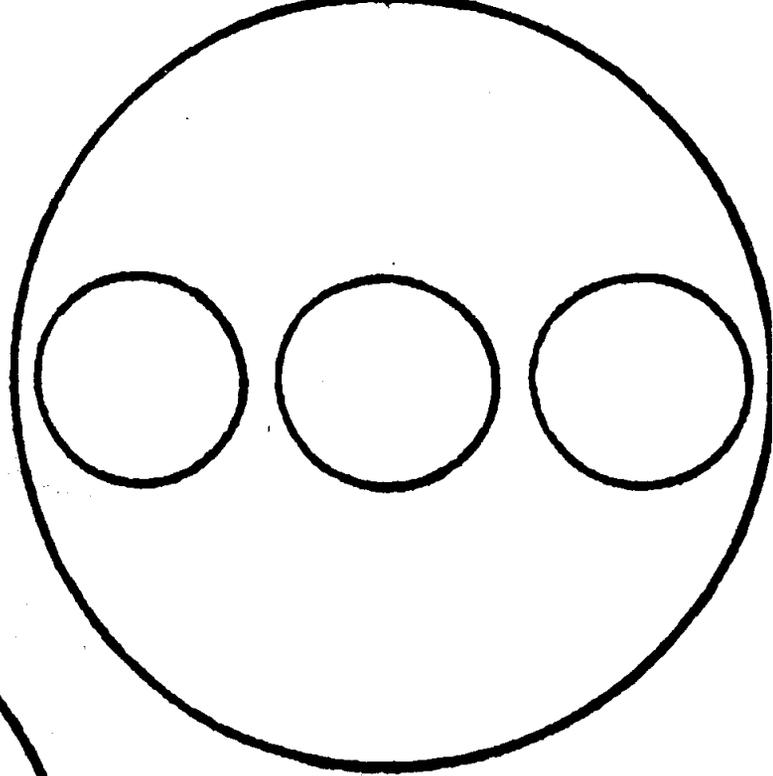
CAUTION



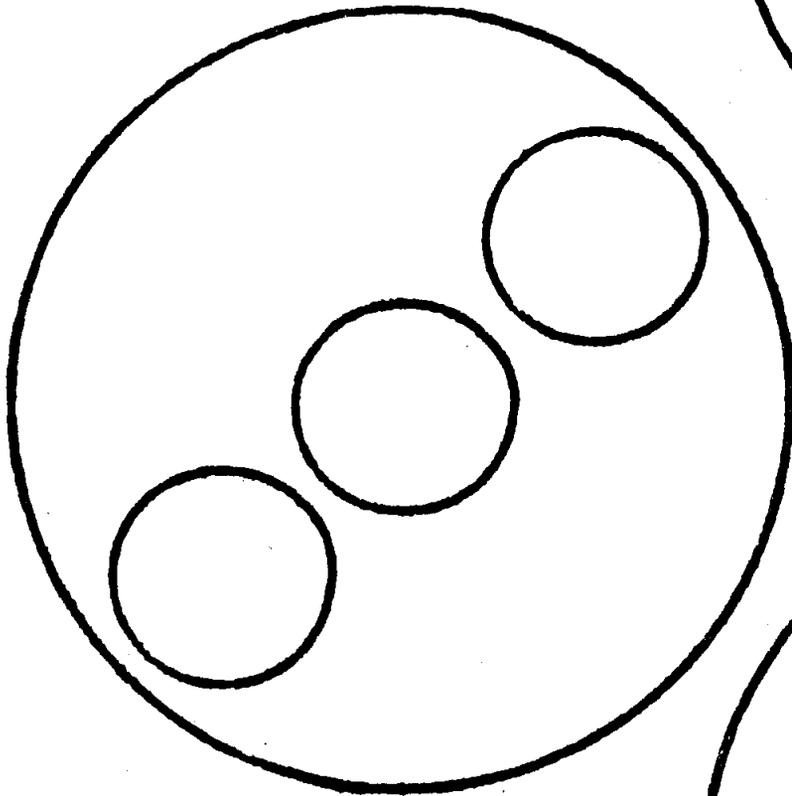
STOP

COLOR LIGHT SIGNALS**

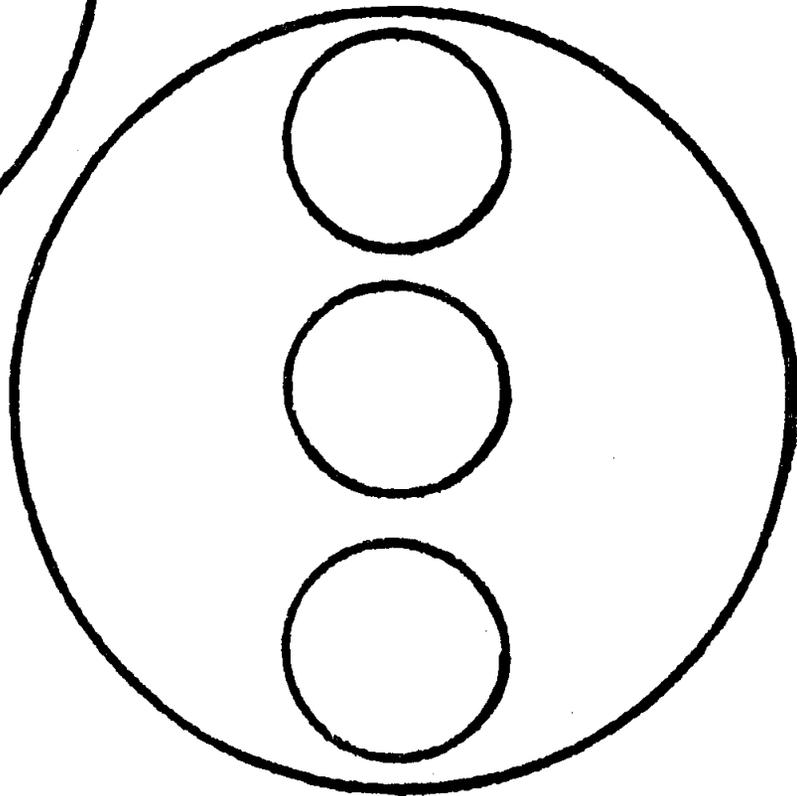




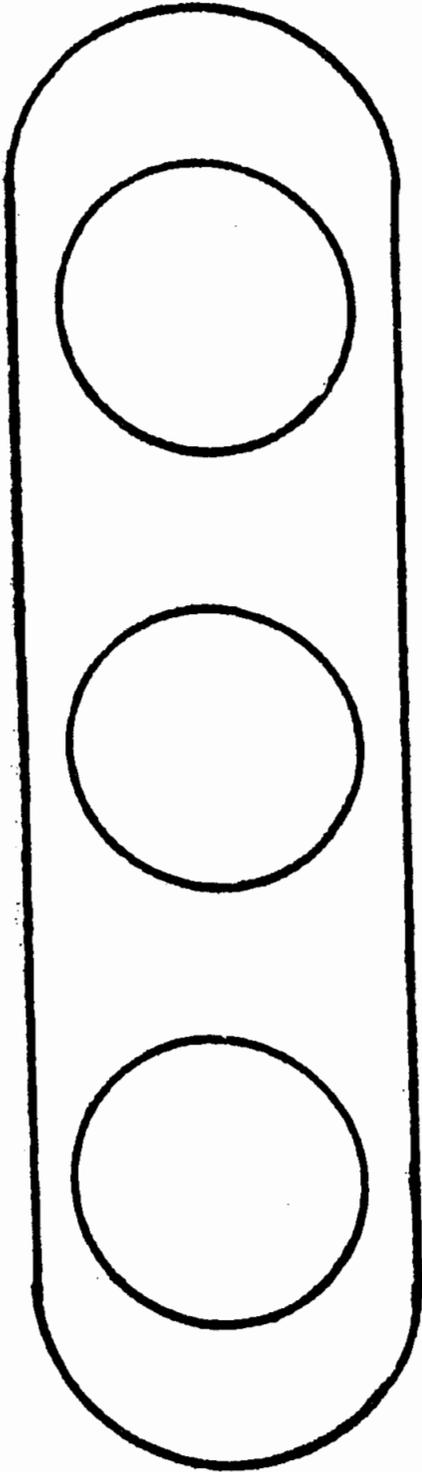
STOP



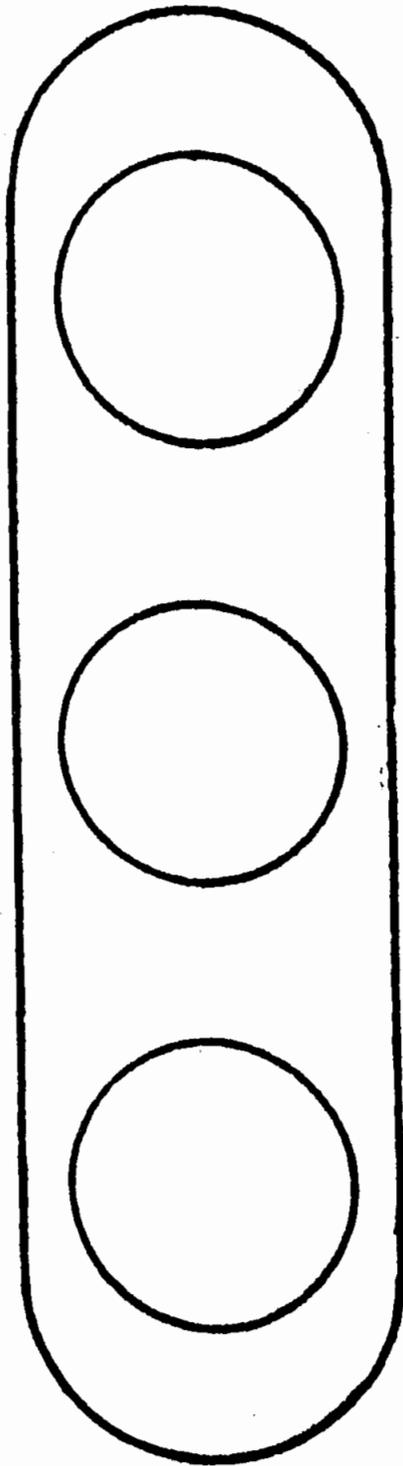
CAUTION



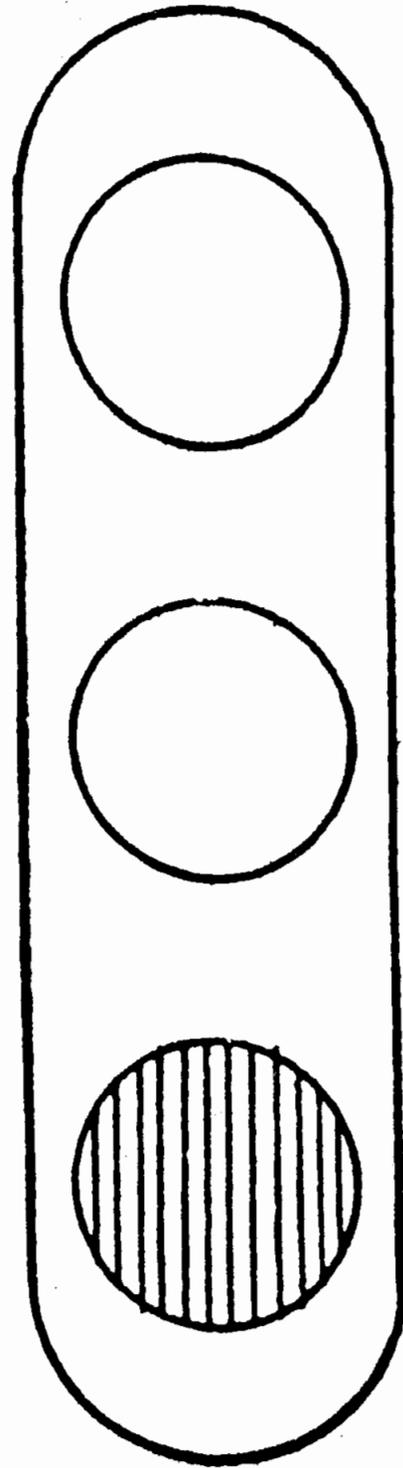
GO



GO

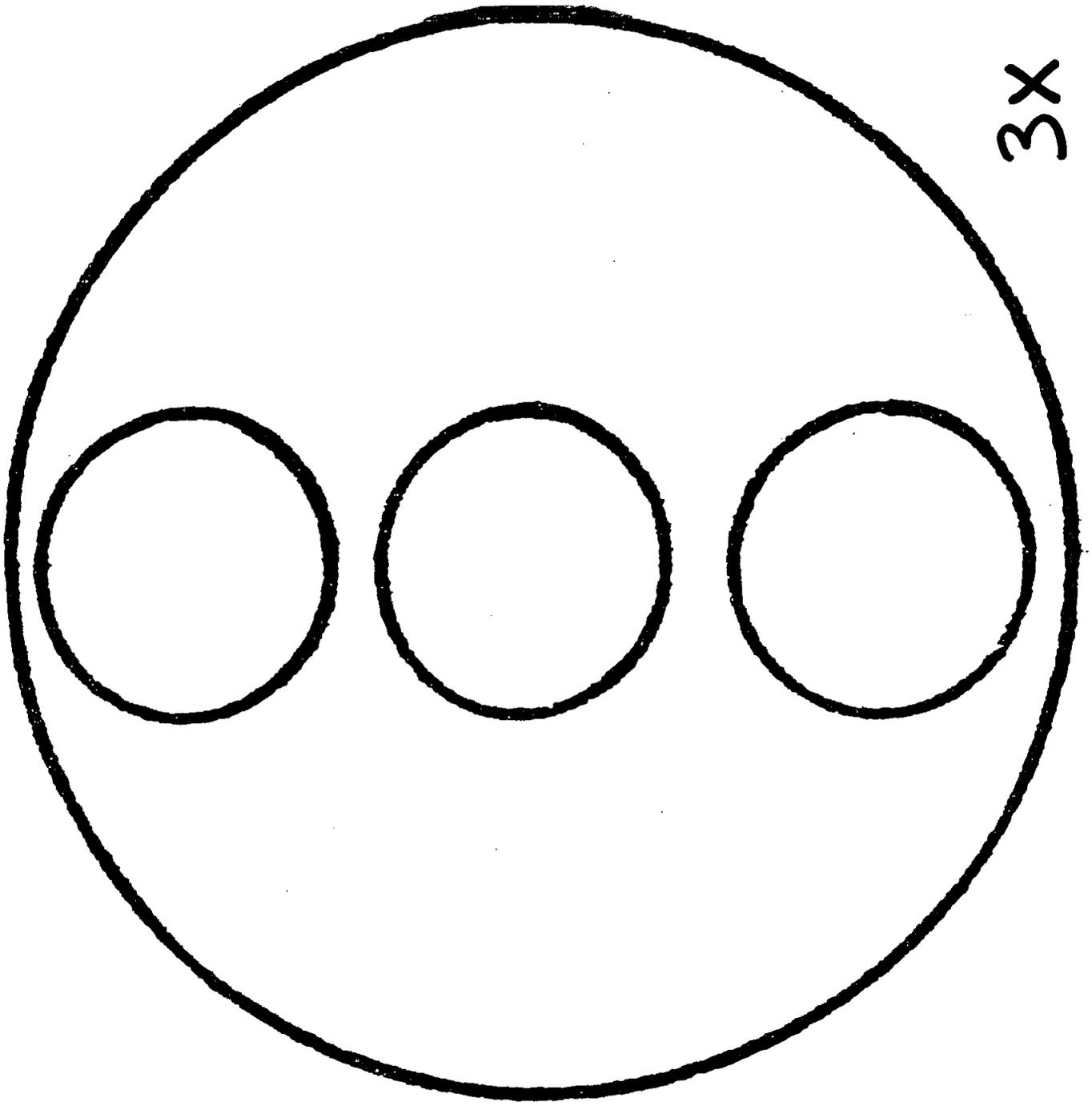


CAUTION



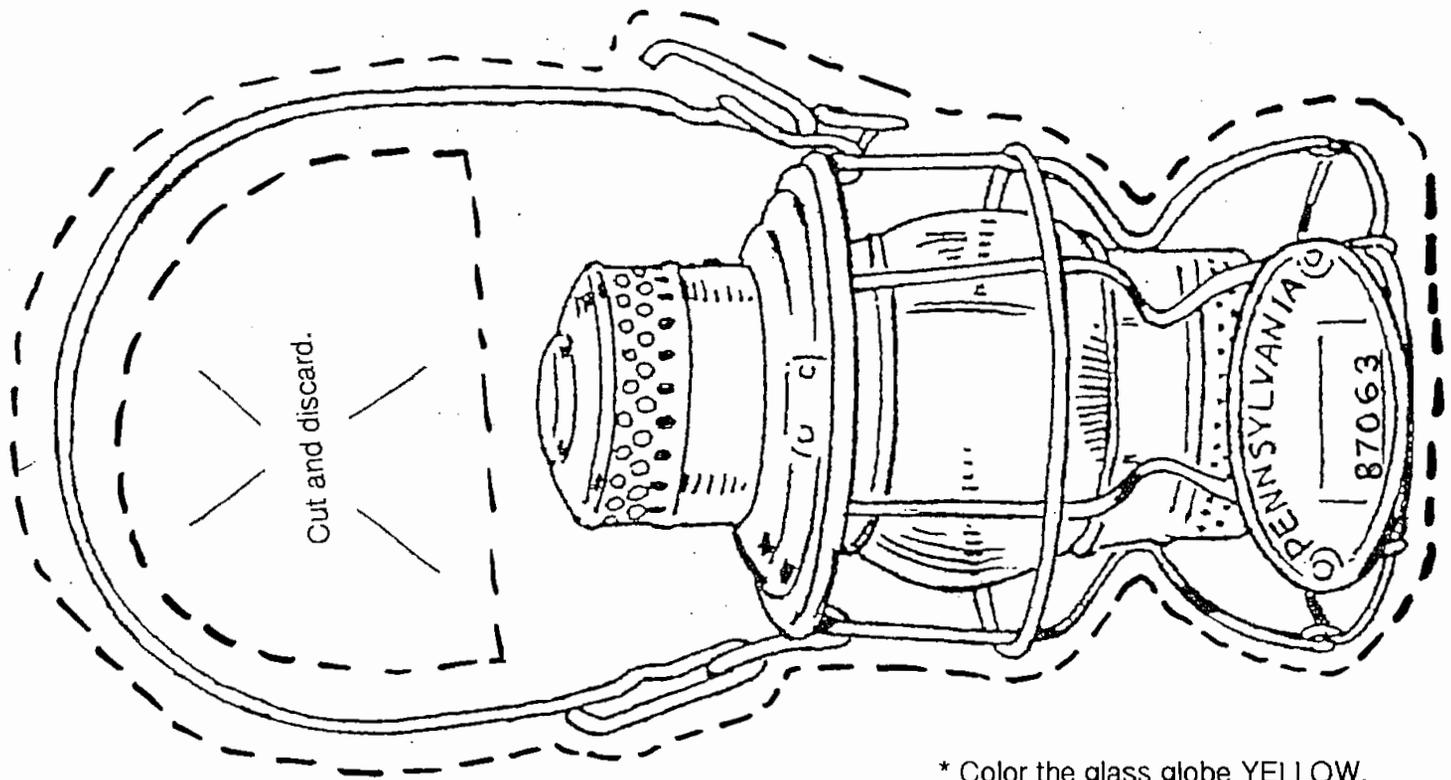
STOP

COLOR LIGHT SIGNALS



3X

Materials Coloring Guide



* Color the glass globe YELLOW.

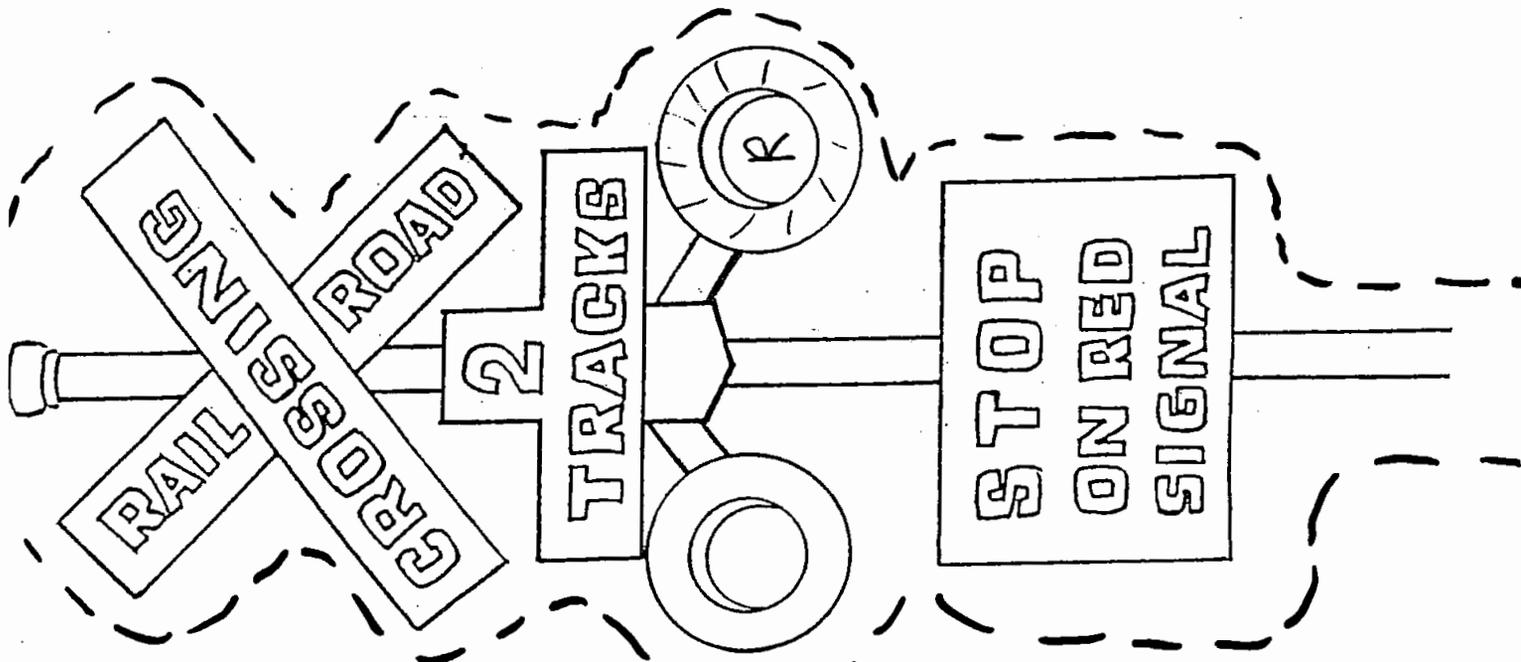
* Color the base, the handle and the rest of the cage surrounding the globe GRAY.

* Color one or both lights RED.

* Color the letters BLACK.

* Leave the crossbuck and signs blank or in WHITE.

* Color the pole itself GRAY.





RAIL

ROAD

CROSSING

2

TRACKS

STOP

ON RED

SIGNAL

White

Red

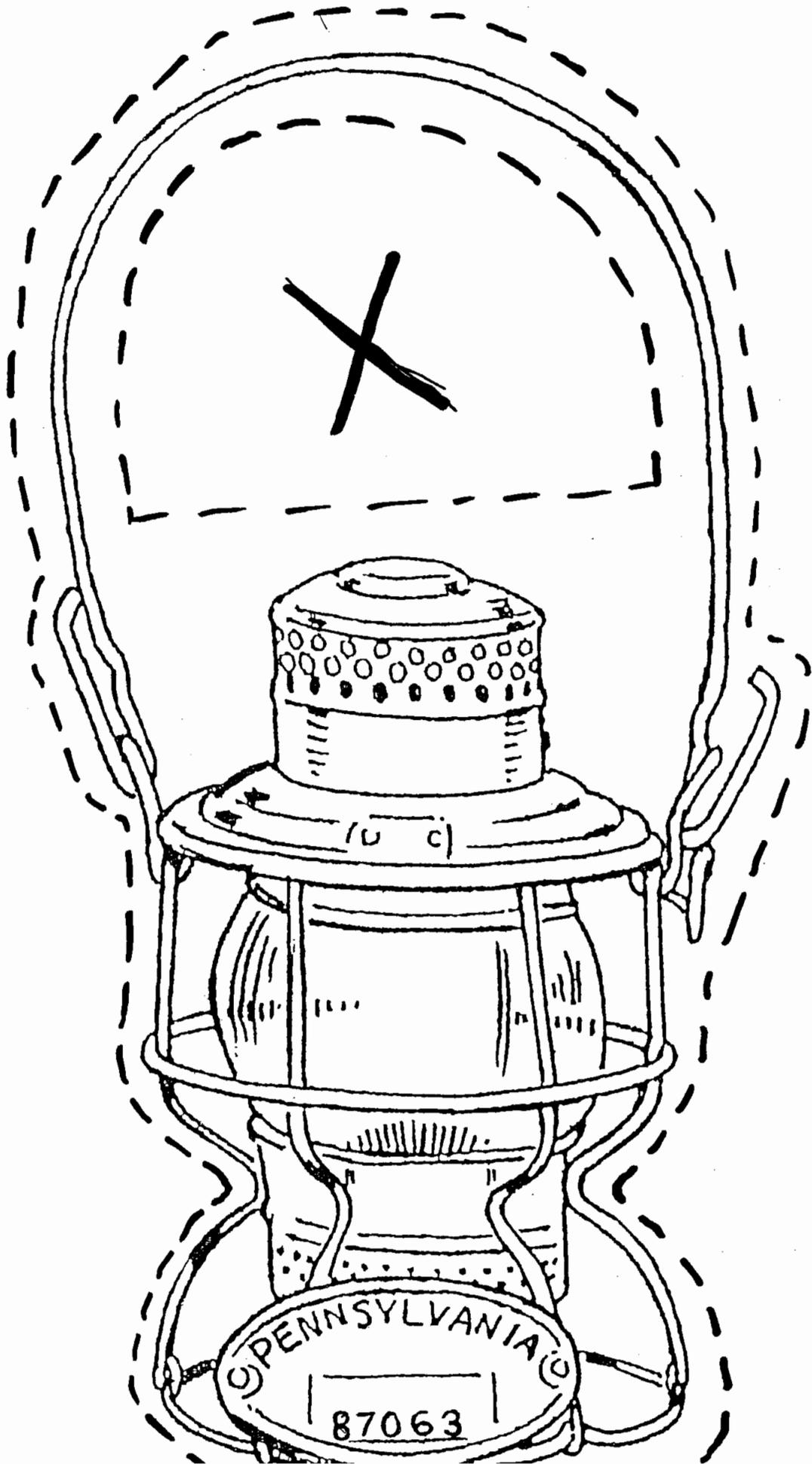
White

Red

White

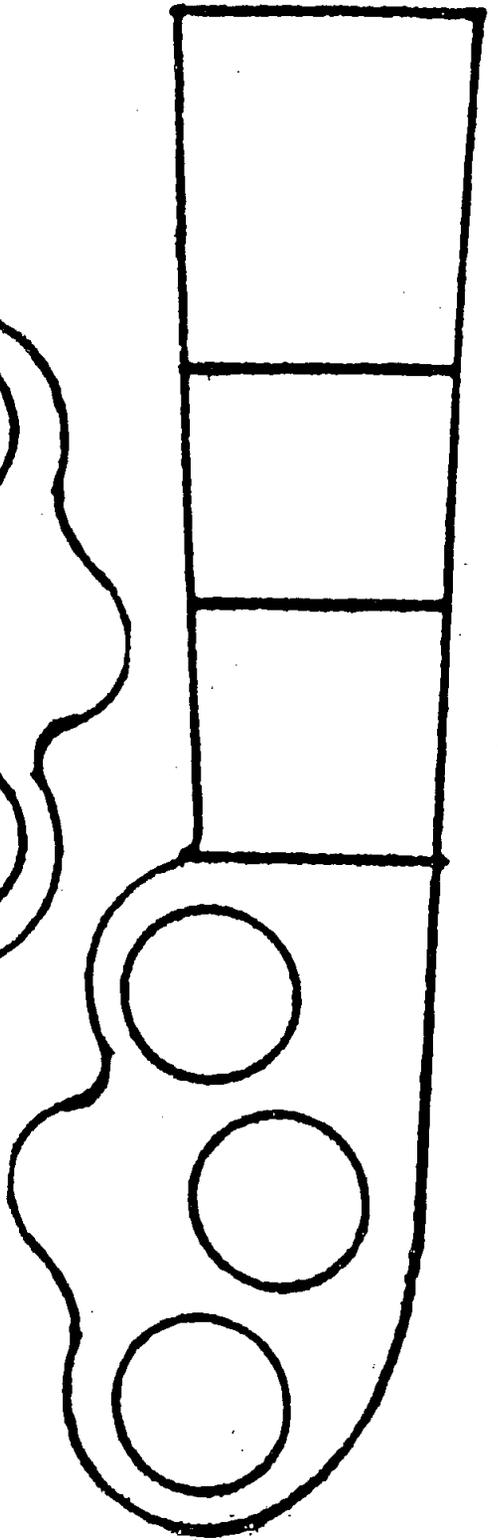
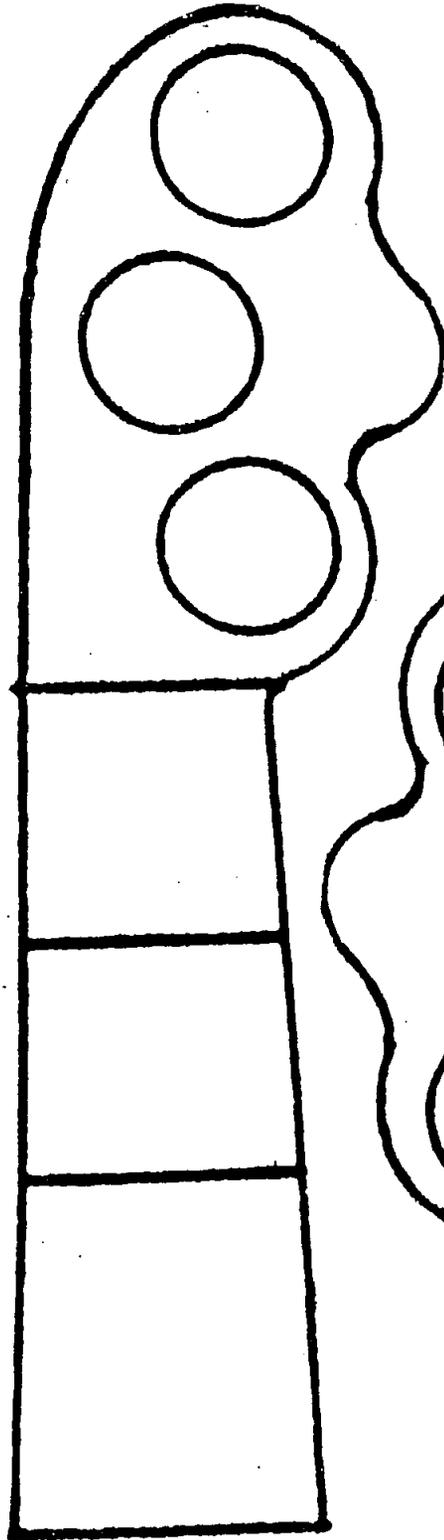
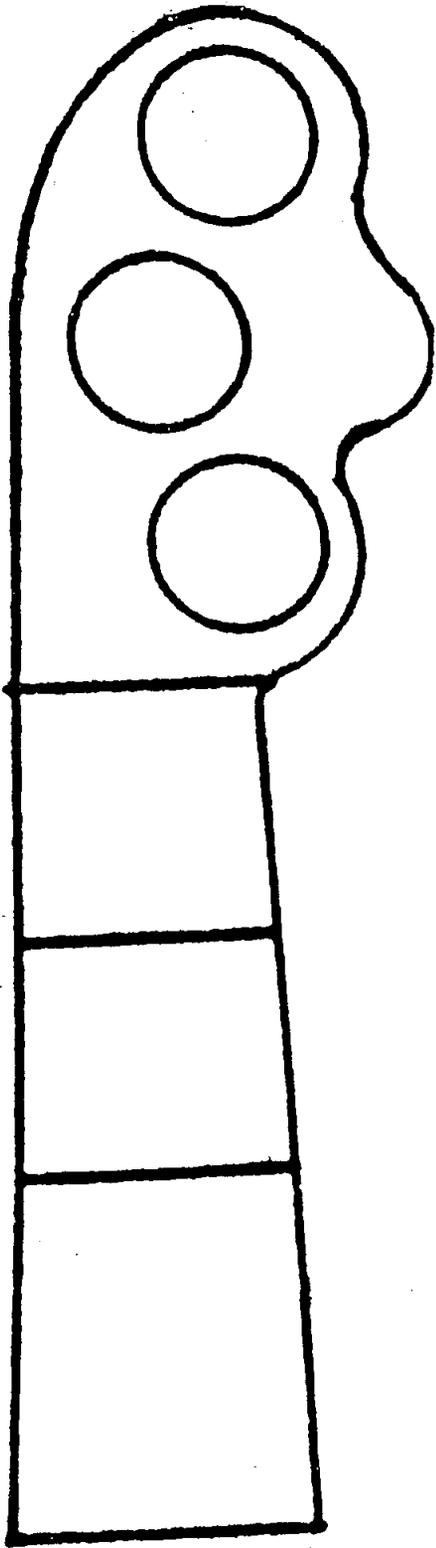
Red

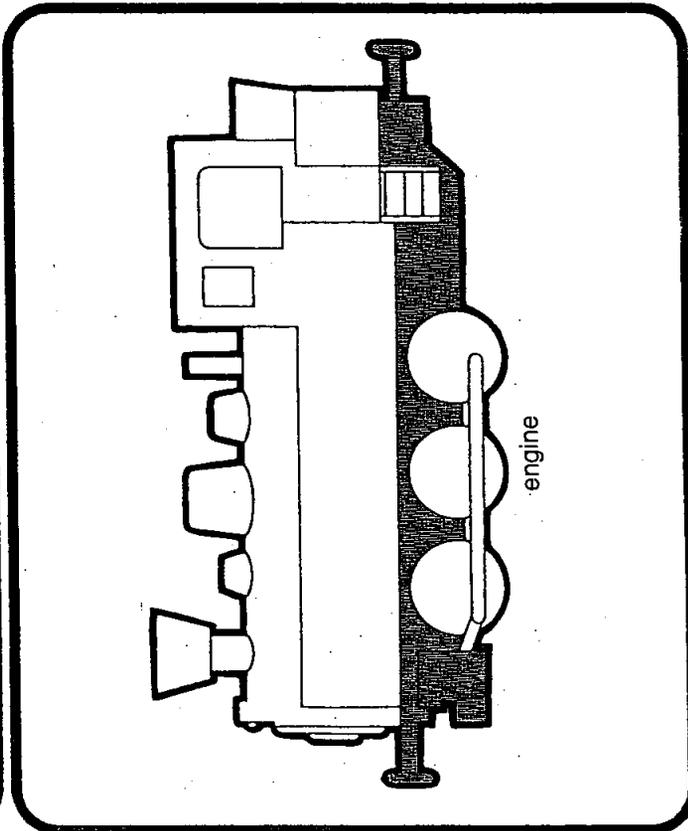
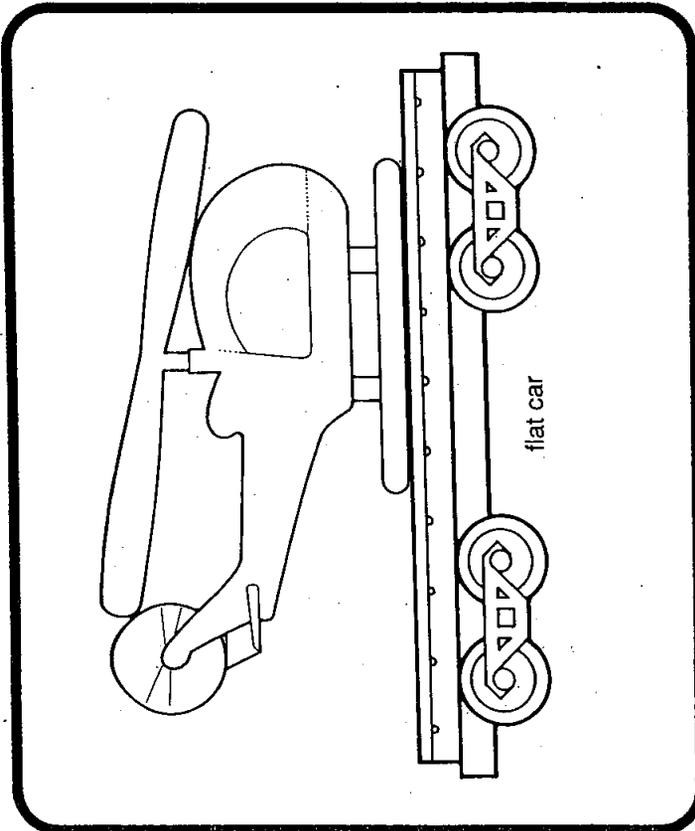
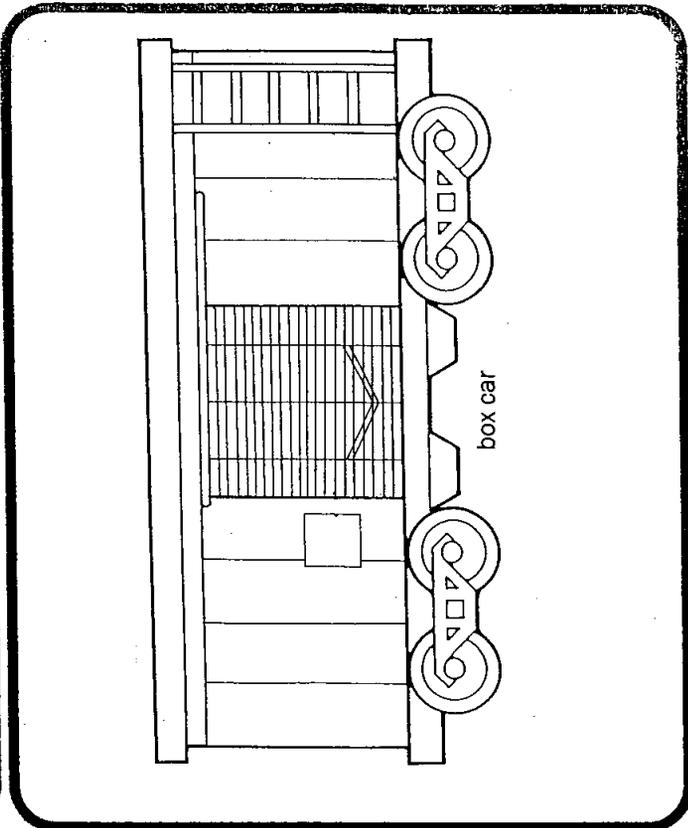
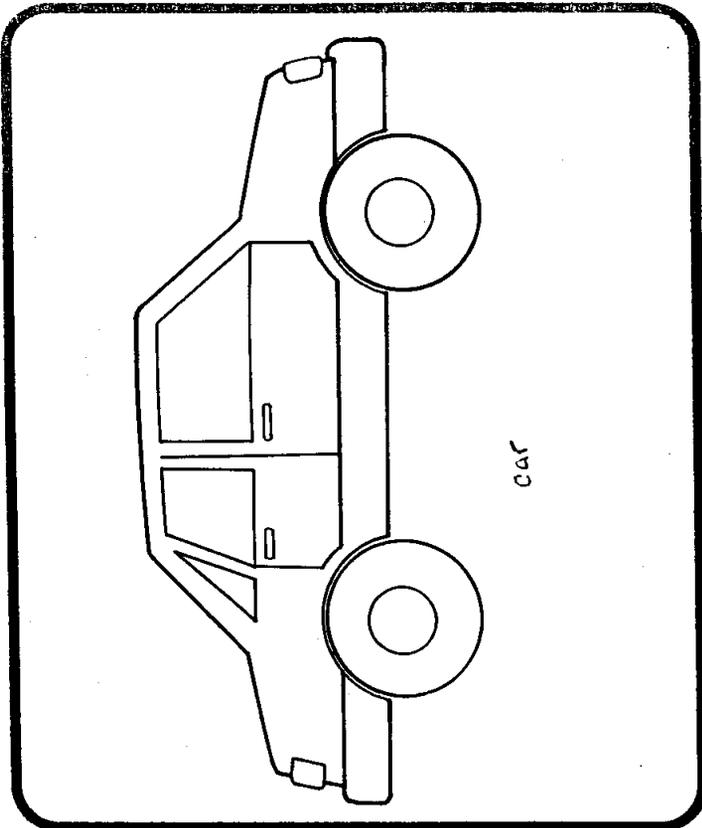
White

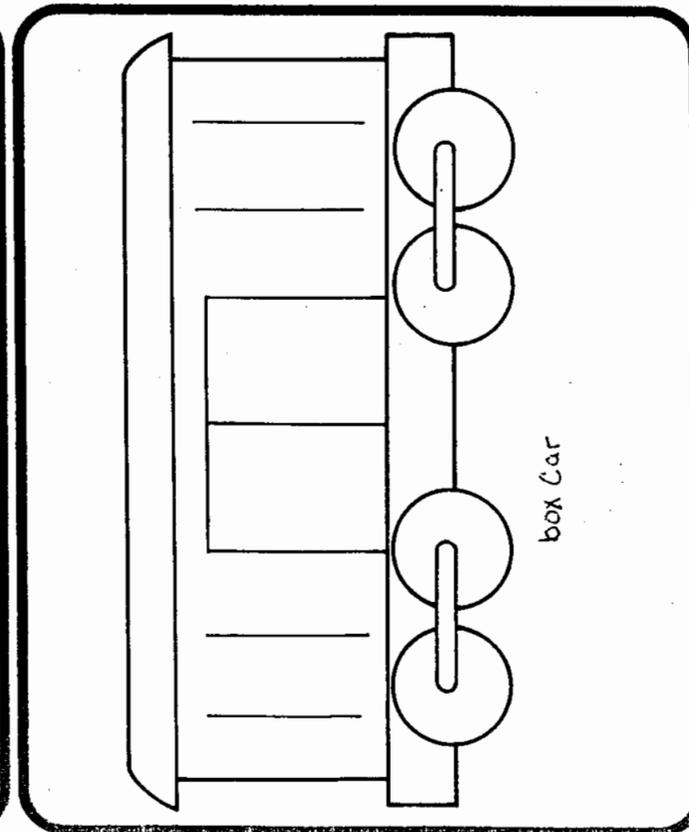
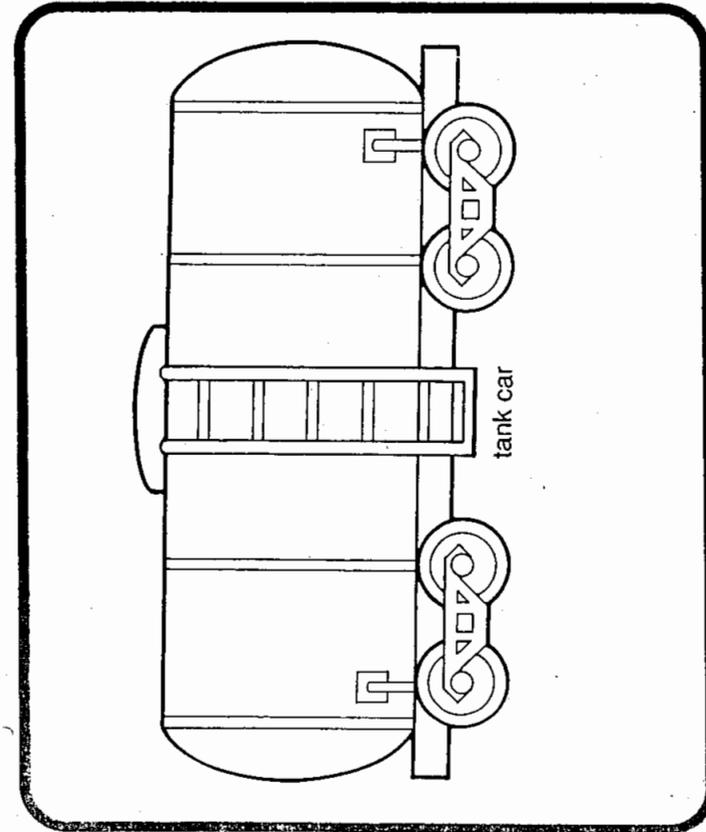
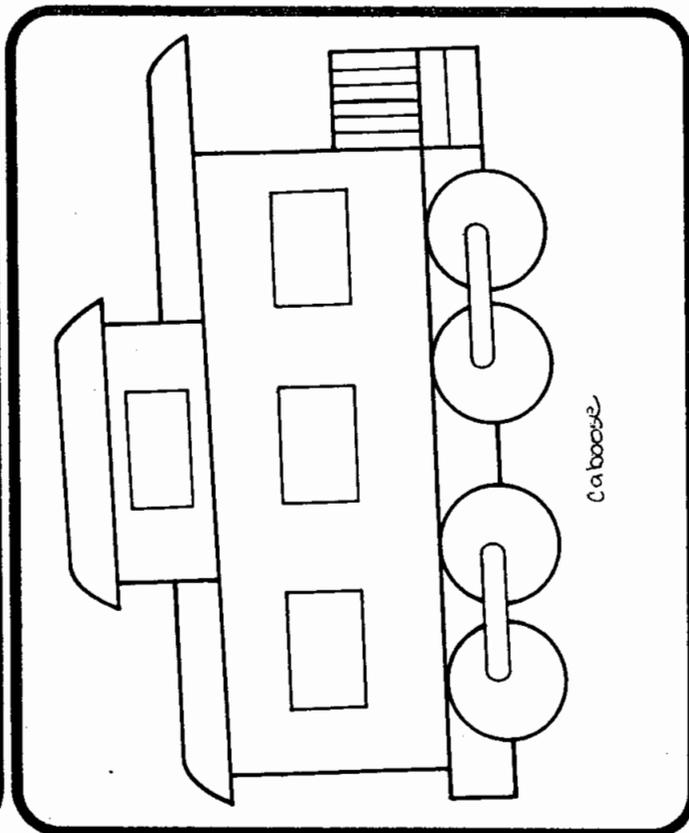
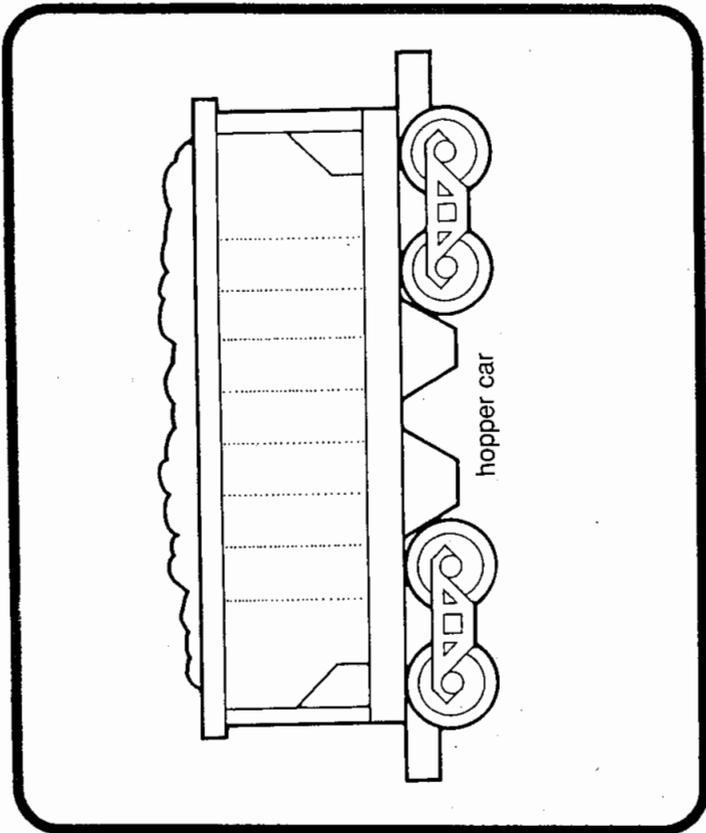


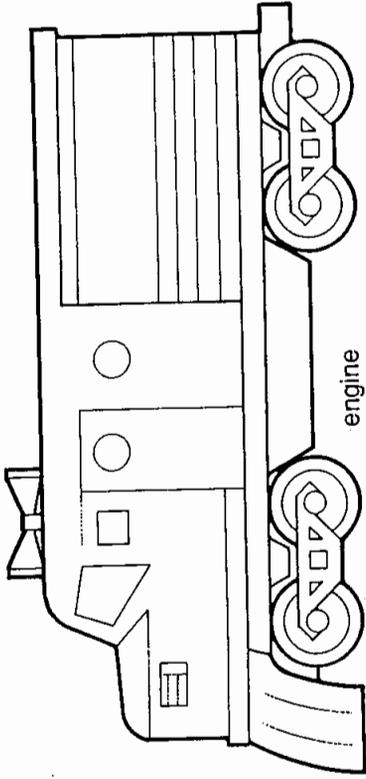
X

PENNSYLVANIA
87063

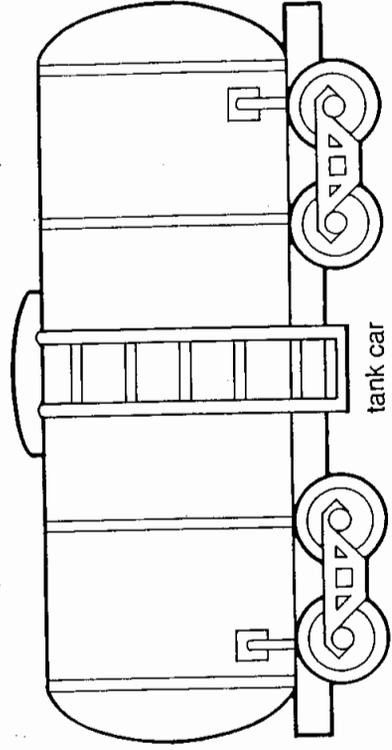




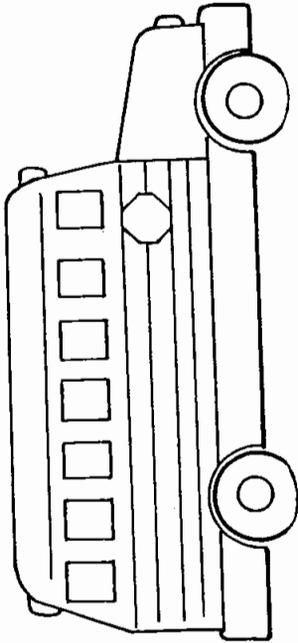




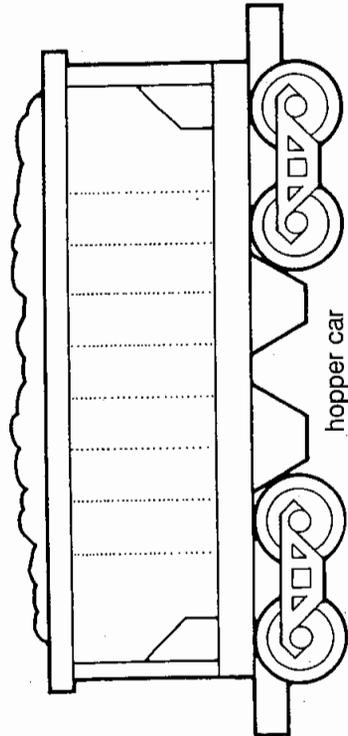
engine



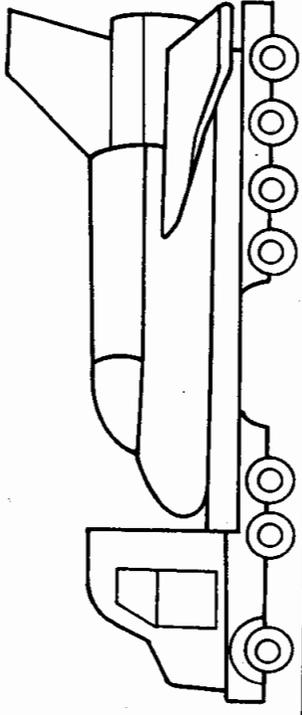
tank car



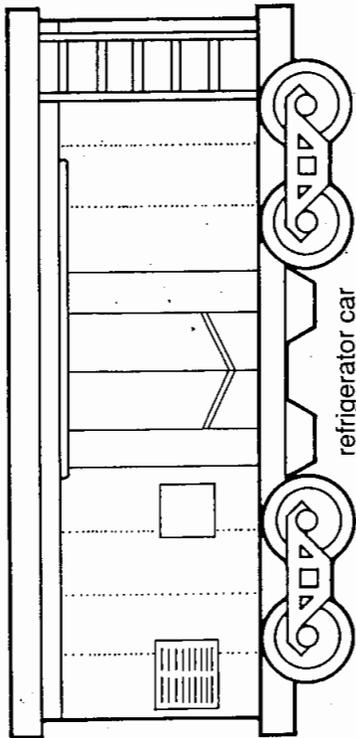
school bus



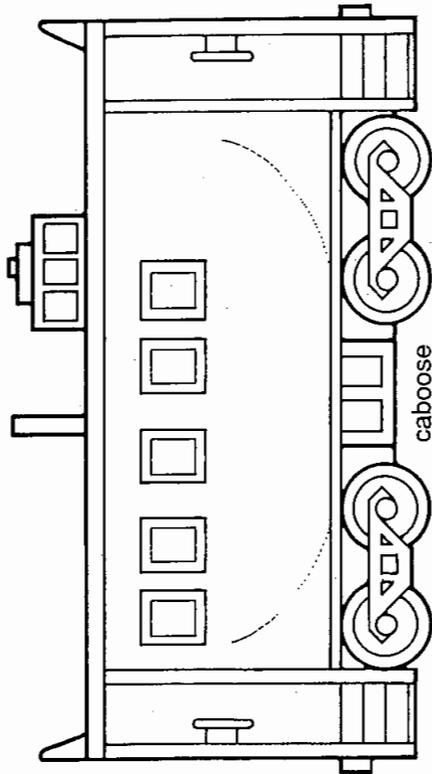
hopper car



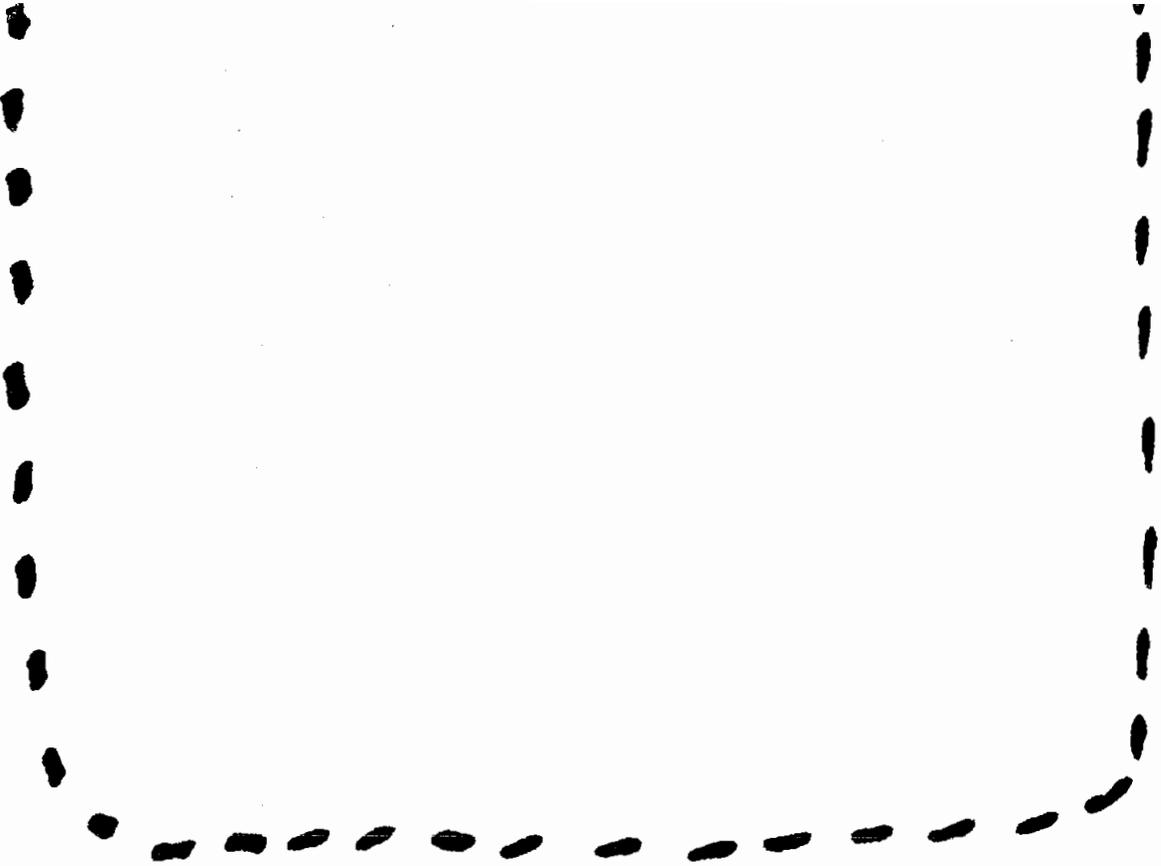
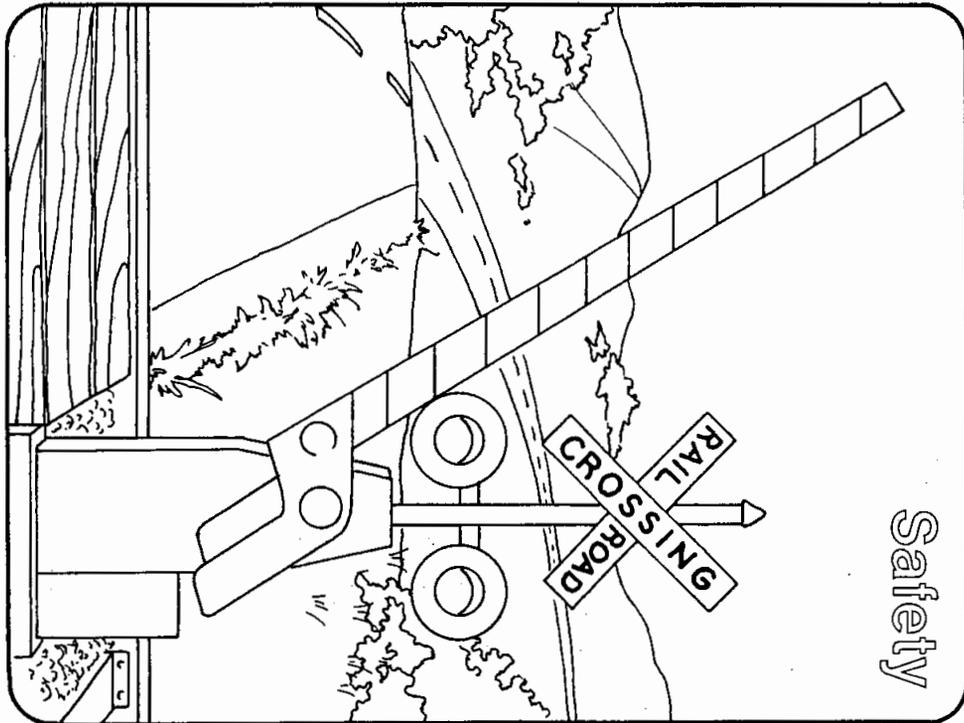
Truck



refrigerator car



caboose

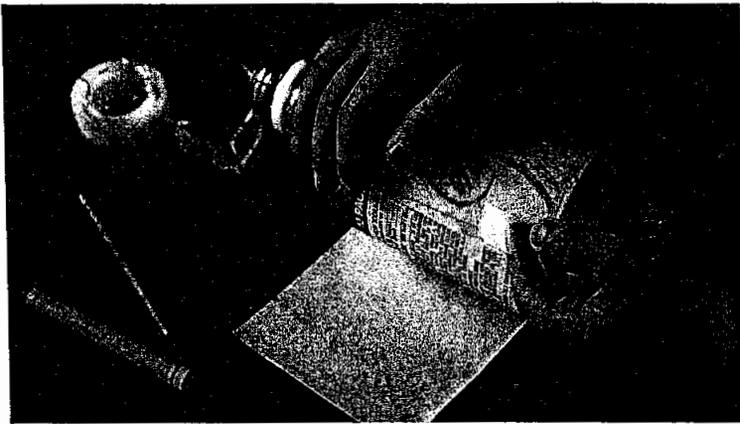


Toot-Toot Whistle

TOOT, TOOT. . . Max can hear the train as it comes down the railroad tracks. Do you know what the train is saying? See the tip on page 21 to find out what the different signals mean.

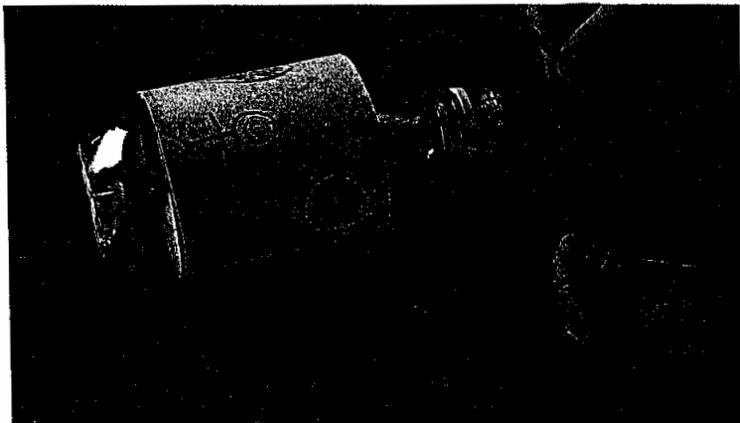
What you'll need...

- Crayons, markers, or colored pencils
- One 3¼x10-inch piece of construction paper
- 1 empty plastic pop bottle, rinsed and drained
- Tape
- String or yarn, about 24 inches long



1 Use the crayons to decorate the paper on 1 side any way you like.

Lay the pop bottle on the undecorated side of the paper. Wrap the paper around the bottle. Tape the paper in place (see photo).



2 Tie the string around the neck of the bottle.

Adjust the length of the string so the bottle can hang around your neck. Tie the ends together in a knot (see photo).

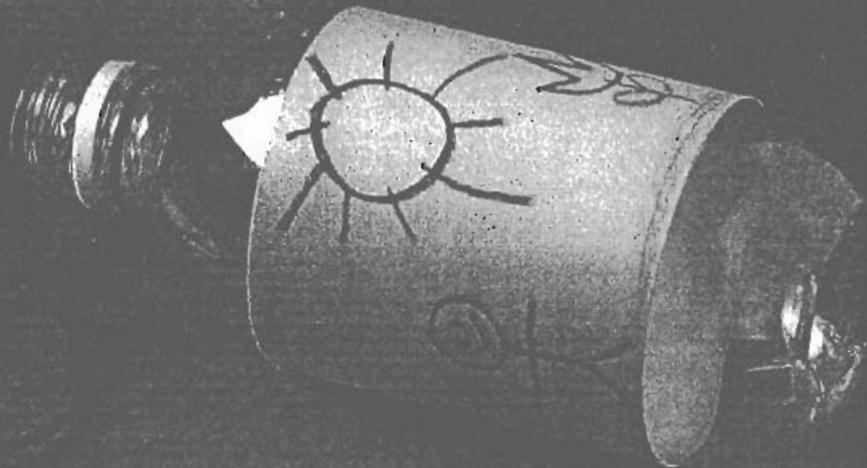
To make your whistle TOOT, TOOT like a real train whistle, blow across the top of the bottle.

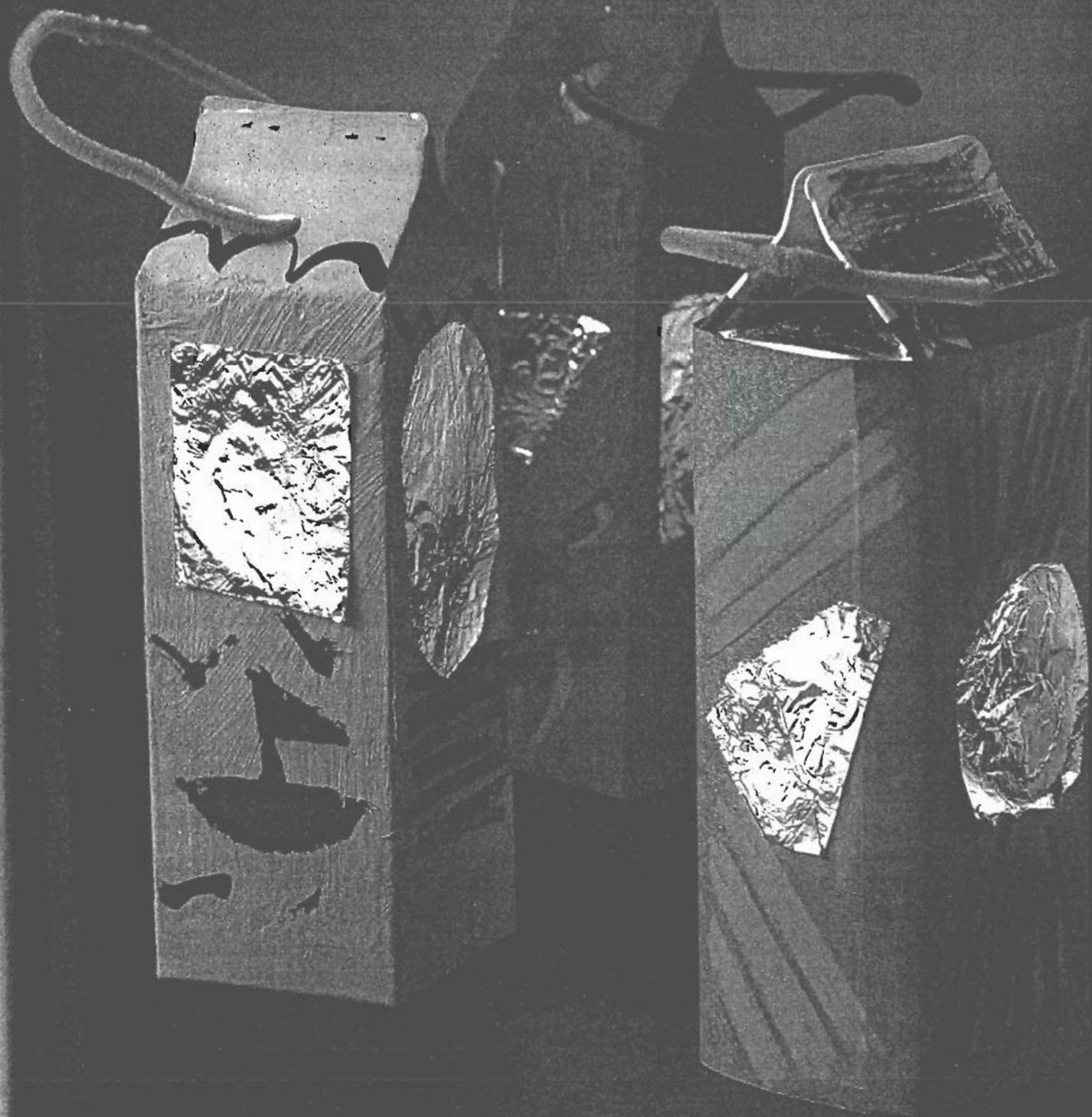


Train Signals

Try these signals for talking with your train.

- 1 long blast - The train is coming into the station.
- 1 short blast - Stop!
- 2 short blasts - Watch out! The train is starting to move.
- Short repeated blasts - Get off the tracks!





Railroad Lantern

People who work on trains use lanterns to tell the engineer driving the train when to stop and when to go. You can make your lantern in your favorite color. Look on page 32 for signals you can use when playing with your lantern.

What you'll need...

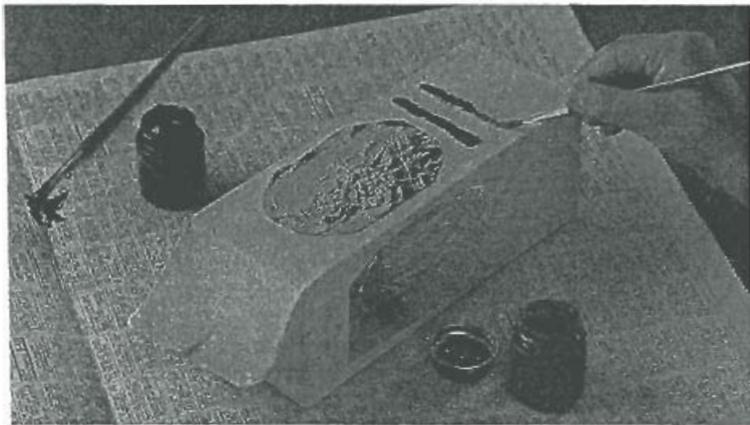
- Newspaper or brown kraft paper (optional)
- Tempera paint
- Paintbrushes
- One 1-quart milk or juice carton, rinsed
- Scissors
- Foil
- Pencil
- 1 pipe cleaner or 12-inch string



1 If desired, cover your work surface with newspaper.

To make a lantern, paint the empty milk carton. Let it dry.

Cut 4 shapes any way you like from the foil. Glue 1 foil shape, shiny side up, on 1 side of the milk carton (see photo). Repeat with remaining foil shapes.



2 Decorate the lantern around the foil shapes any way you like (see photo).



3 With adult help, use a pencil to punch 2 holes on the top of the milk carton.

To make the handle, put a pipe cleaner through the holes (see photo). Then twist the ends together.