

Unsupported Roof Rescue

Problem Booklet

Instructions

Read the problem situation described on the next page. Study the map until you understand the location of the miners and equipment in the problem. Next, answer each of the 10 questions. Do them one at a time. Don't jump ahead, but you may look back to earlier questions and answers. For most of the questions, choose only one answer unless you are told to "Try again!" A few questions ask you to select as many answers as you think are correct. Follow the instructions for each question.

After you have selected a choice to a question, look up its number on the answer sheet. Select your answer to each question by rubbing the developing pen between the brackets on the answer sheet. A hidden message will appear and tell you if you are right. When you have finished, you will learn how to score your performance.

Background

8 entries are being driven in 42 inch coal. Eleven miners are working on Section 001.
The portal is 4,000 feet outby the face.

It is just after lunch. (Marvin ate a big meal.)

The EMT normally on this section is absent today. You are trained in basic first aid but not as an EMT. The top in this section is generally drummy and poor. The roof bolter has an ATRS.

Problem

You are the pinner operator. You are bolting the roof in the #2 entry at the face. Your helper, Marvin R. Letcher, has gone out ahead of the bolter to mark the roof. You yell at him to get back. He almost gets back to supported roof when a piece of draw slate falls trapping both his legs. (See Figures 1 & 2) Marvin is laying face down screaming. The roof is dribbling across the whole entry just past the last row of bolts. Now, turn the page and answer the first question.

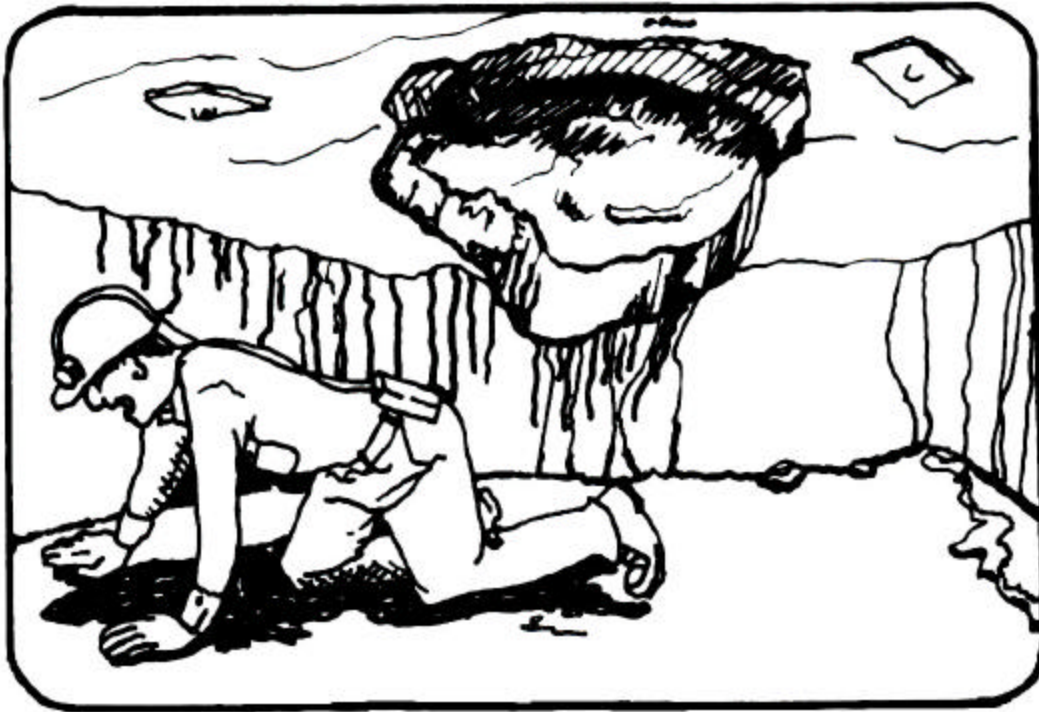


Figure 1: Draw slate falls from roof

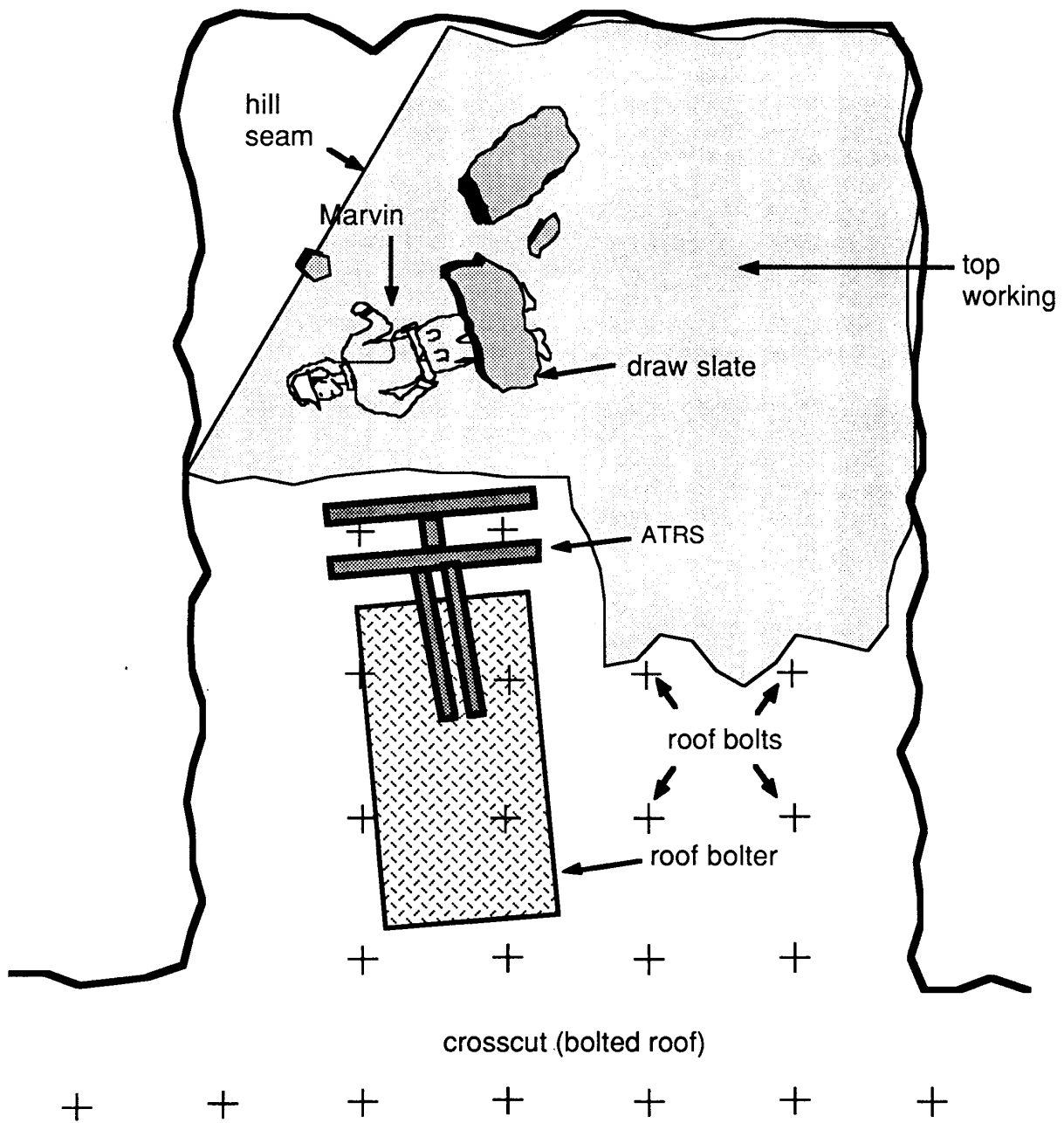


Figure 2: Draw slate hits Marvin's legs

Question A

You yell for help. Three other miners come quickly. Marvin's legs are under the slate. His head is near the left rib. The roof bolter is outby his position about six feet. The ATRS is in place. (See Figure 3) The top continues to work. What would you do now? (Choose only ONE unless you are told to "Try again!")

1. Grab a couple of slate bars. Have the other three miners help you pry the rock off Marvin's legs.
2. Get the head of the roof bolter under the corner of the rock and lift it gently off Marvin's legs.
3. Move close to Marvin to check his injuries and begin first aid immediately.
4. Leave the bolter and the ATRS where they are. Set roof jacks and timbers from the ATRS toward and around Marvin.
5. Lower the ATRS on the bolter. Tram the bolter ahead and then raise the ATRS over Marvin.
6. Tram the roof bolter out of the entry. Then tram a scoop in so you can lift the rock off Marvin with the scoop bucket.



Stretcher and first aid kit at the dinner hole 240 feet away
Mine pager at tailpiece 200 feet away.

Figure 3: Top view of Marvin's position and conditions in the entry

Question B

You have now supported the roof with two jacks and three posts. Using slate bars and a jack, the three of you have lifted the slate just enough to free Marvin's legs. The top continues to dribble across the whole entry. What should you do now? (Choose only ONE unless you are told to "Try again!")

7. Have your buddies grab Marvin by his belt and shirt while you grab his pants leg above and below his left knee. Pull together and slide him out from under the rock sideways on his stomach.
8. Get a board or some other object to serve as a splint. Put the board between his legs. Then gently tie his legs together before moving him.
9. Reach under the slate. Grab him by his boots and jerk him out sideways by his feet.
10. Leave Marvin under the rock. Give him first aid in this position until he has been fully immobilized and can be moved without further injury.

Question C

Marvin is still screaming after you slide him out from under the rock. You and your buddies log roll him onto his back so you can pull him past the bolting machine. You are about six feet in by the last row of bolts. Even with the extra jacks and timbers you have set, the roof continues to work. You notice Marvin's right thigh is crooked and bloody. What is the first thing you should do in this situation? (Choose only ONE unless you are told to "Try again!")

11. Check Marvin's airway, breathing, and pulse.
12. Put Marvin into a scoop and transport him to the surface.
13. Move Marvin down the entry under supported roof.
14. Slit Marvin's pant leg and look at his right thigh.

Question D

How should you and your buddies move Marvin to get under well supported roof?
(Choose only ONE unless you are told to "Try again!")

15. Cradle Marvin's head and shoulders in your arms. Drag him by his shirt shoulders and his belt at the sides so that he slides on his back with his head, neck, spine, and legs in line. Keep his head and shoulders close to the ground.
16. Continue to log roll Marvin down the entry having all four miners help turn him.
17. Send two miners to get the first aid kit. When they return put Marvin on the stretcher and immobilize him. Then bring a scoop up and put the stretcher in the bucket and take him out by the face.
18. Splint Marvin's legs with a piece of brattice cloth or anything handy. Gently tie his legs together. Then drag him out by head first to a safe spot.

Question E

You, Marvin and the others are now under well supported roof near the last open crosscut of #2 entry. The crosscut is bolted on both sides. An EMT from another section has been called but it will take him 20 minutes to get to you. Marvin is no longer screaming, but moaning softly and complaining of pain in both legs. What is the first thing you should do now? (Choose only ONE unless you are told to "Try again!")

19. Begin checking Marvin for injuries.
20. Cover Marvin with a blanket and wait for the EMT.
21. Use a scoop bucket to take him to the mantrip and take him out immediately.
22. Leave Marvin on his back and prop up both legs with folded brattice cloth.

Question F

How would you check Marvin for injuries? (Select as MANY as you think are correct.)

- 23. Ask Marvin if he has pain anywhere else besides his legs.
- 24. Check Marvin's airway and his breathing.
- 25. Check Marvin's pulse.
- 26. Pull off Marvin's boots and take his pulse in both feet.
- 27. Feel Marvin's hands.
- 28. Slit both pant legs and look at his legs.

When you have finished your selection(s) do the next question.

Question G

Fast Jack, a miner from the section, goes to call outside and report on Marvin's condition. What should he say? (Choose only ONE unless you are told to "Try again!")

- 29. "We have a man with broken legs. He needs help."
- 30. "Marvin Letcher got caught in a roof fall. He is hurt bad. We need help."
- 31. "This is Fast Jack. Marvin Letcher has been hurt by a roof fall on Section 001. His upper right leg is broken and the bone is sticking out. He is passed out and bleeding."
- 32. "We got someone busted up real bad on the section. He needs a doc real fast."

Question H

Marvin is unconscious. His breathing is rapid and shallow. His pulse is about 120 and weak. His hands feel cold and moist. His skin color is pale. Two miners bring a folding aluminum stretcher, blankets, and a first aid kit. What should you do to care for Marvin? (Select as MANY as you think are correct.)

- 33. Lift Marvin onto the stretcher and take him out of the mine without delay.
- 34. Apply a sterile dressing and pressure bandage to the right thigh wound.
- 35. Before bandaging, use a sterile dressing to push the sharp ends of the thigh bone back into the wound.
- 36. Splint Marvin's broken right thigh with an inflatable air splint.
- 37. Use a long board on the outside, a short board on the inside, and padding and cravats to splint Marvin's broken right thigh, before you lift him onto the stretcher.
- 38. Splint Marvin's lower left leg with an inflatable air splint.
- 39. Lift Marvin onto the stretcher before you splint his broken legs.
- 40. After Marvin is tied to the stretcher with cravats, cover him with a blanket and elevate the foot end of the stretcher about 12 inches.
- 41. Tell Marvin what you are doing as you care for him.

When you have finished your selection(s) do the next question.

Question I

As you begin to transport Marvin to the surface, he starts to vomit. What should you do? (Choose only ONE unless you are told to "Try again!")

- 42. Untie the chest cravats that secure him to the stretcher. Sit him up and tip his head forward.
- 43. Ignore the vomiting. It won't hurt anything.
- 44. Use repeated finger sweeps of his mouth to clear the vomit, but don't move his head.
- 45. Keep the foot end of the stretcher elevated but tip it slightly to the side with his broken thigh on the high side. Turn his head to the down side so the vomit can drain out. Do a finger sweep of his mouth each time he vomits to remove material.

Marvin has a good chance to live if you carried out the correct procedures. Too many incorrect actions might deepen his shock and result in his death. Working on him under bad top might kill both you and him. Marvin's only chance is for you to stay safe and well. Otherwise he will die.

Question J

On your answer sheet, list all violations of state and federal laws and your company rules that you can find in this problem.

Scoring your performance

1. Count the total number of responses you colored in that were marked "correct." Write this number in the first blank on the answer sheet.
2. Count the total number of "incorrect" responses you colored in. Subtract this number from 28. Write the difference in the second blank on the answer sheet.
3. Add the numbers on the first and second blanks. This is your score.

The best possible score is 45.

The worst possible score is 0.