

## **Highwall Rescue Exercise**

### **Problem Booklet**

## **Instructions**

Read the problem situation described on the next page. Next, answer each of the ten questions. Do them one at a time. Don't jump ahead, but you may look back to earlier questions and answers.

Most of the questions ask you to choose only one answer unless you are told to "Try again!" Other 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 using the developing pen to mark the space 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**

It is 12:50 p.m., and the temperature is 58°.

You and four other miners are working near the highwall in Pit #3.

The highwall is about 35 feet high at this point.

The mine offices are three miles away.

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

The EMT who normally works with you is absent today.

You are trained in basic first aid but not as an EMT.

A one ton 4 x 4 pickup truck equipped with a 2 way radio is in the pit about 800 feet away from you.

**Problem**

You operate a large front-end loader. As you shut off your machine, you hear a crash and a scream. You look toward the highwall. Three large chunks of rock have fallen. One has hit Marvin Letcher, a co-worker. Marvin is trapped under the rock at the base of the highwall. He is lying face down, screaming. Turn the page, look at Figure 1, and answer the first question.

**Question A**

You yell for help. Three other workers come quickly. Marvin's legs are trapped under a large piece of rock that has fallen out and slid down from about 10 feet up the highwall. (See Figure 1 below) Small pieces of rock continue to "dribble" from the unstable highwall from an area about 12 feet up. What is the first thing you should do now? (Choose only ONE unless you are told to "Try again!")

1. Send someone for jacks and long planks so you can lift the rock off Marvin's legs.
2. Move close to Marvin to check his injuries and begin first aid immediately.
3. Move your front-end loader facing the highwall. Position the bucket over Marvin and place it firmly against the wall to protect him from other rocks that may fall.
4. Move your front-end loader to the highwall. Use the bucket to push the rock off Marvin's legs.



**Figure 1:** Rock falls and pins Marvin's Legs

## Question B

After you raise the bucket above Marvin and push it firmly against the highwall, you stop the loader engine and set the brakes. Working under the protection of the loader bucket, and using crowbars, two of your co-workers gently lift the rock just high enough to free Marvin's legs. You can reach under the rock only far enough to grab Marvin's left leg. Small rocks and pebbles continue to dribble from the face of the highwall about 12 feet up. What should you do now? (Choose only ONE unless you are told to "Try again!")

5. Have your buddies grab Marvin by his belt and shirt while you grab his pant leg above and below his left knee. Pull together and slide him out from under the rock sideways on his stomach.
6. 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.
7. Try to reach under the end of the rock so you can grab Marvin by his boots and swing his legs sideways out from under the rock.
8. Prop the rock up and leave Marvin as you found him. 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. While still under the loader bucket, you and the other two miners gently logroll Marvin onto his back. You notice Marvin's right thigh is crooked and bloody. Pebbles continue to dribble from the highwall and strike the loader bucket. What is the first thing you should do now? (Choose only ONE unless you are told to "Try again!")

9. Begin a hands on examination of Marvin for injuries.
10. Have the other two miners help you use a clothing drag to slide Marvin away from the highwall to a protected position underneath the frame of the front-end loader.
11. Check Marvin's airway, breathing, and pulse.
12. Tell Marvin that his injuries are not serious and that he will be fine.
13. Ask Marvin if he knows what his blood type is or if he has any relatives who have the same type of blood.

**Question D**

You, Marvin, and the other two miners are now under the front-end loader toward the rear wheels. The loader engine is off, the brakes are set, and the bucket is still raised and firmly pushed against the highwall. One of the other miners runs to the pickup truck and radios for help. He returns with the truck and says the EMT is on the way but it will take her about 20 minutes to get to you. Marvin is no longer screaming, but moaning softly and complaining of pain in both legs. Small rocks continue to fall from the highwall and strike the loader bucket. What is the first thing you should do now? (Choose only ONE unless you are told to "Try again!")

14. Check Marvin for injuries.
15. Cover Marvin with a blanket and wait for the EMT.
16. Load Marvin into the pickup truck and take him to the first-aid room at the mine office.
17. Leave Marvin on his back and prop up both legs about 12 inches.
18. Have the other two miners help you use a clothing drag to slide Marvin out from under the loader to a position about 50 feet behind the machine.

**Question E**

You have used a clothing drag to move Marvin out from behind the loader to a safe place about 70 feet from the highwall. As you dragged Marvin you kept his head and neck lined up with his body as his feet and legs trailed. In this way, you were able to slide him to safety with his whole body moving as a unit. There was very little sideways movement of his head, neck, body, and limbs.

You leave the loader where it is. One of the miners pulls the pickup truck between the highwall and you and Marvin to provide added protection from any stray rocks that might roll down. Now you decide to check Marvin for injuries. What should you do? (Select as MANY as you think are correct.)

19. Ask Marvin if he has pain anywhere else besides his legs.
20. Check Marvin's airway and his breathing.
21. Check Marvin's pulse.
22. Pull off Marvin's boots and take his pulse in both feet.
23. Feel Marvin's hands.
24. Slit both pant legs and look at Marvin's legs.

**When you have made your selection(s), do the next question.**



**Question F**

Jack Mathews, the miner who went to the pickup truck and radioed for help, returns to the pickup to report on Marvin's condition. What should Jack say when he calls the dispatcher? (Choose only ONE unless you are told to "Try again!")

- 25. "We have a man with broken legs. He needs help."
- 26. "Marvin Letcher was trapped under a rock fall in Pit #3. He is hurt bad. We need help."
- 27. "This is Jack Mathews. A miner has been hurt by a rock fall from the highwall in Pit #3. We got the rock off him. He appears to have an open fracture of the right upper leg and a possible fracture of the left leg. He is passed out and bleeding."
- 28. "We got someone hurt real bad in Pit #3. He needs a doctor as soon as possible."

**Question G**

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.)

29. Lift Marvin onto the stretcher, put him into the pickup truck, and take him to the mine's emergency first aid room without delay.
30. Apply a sterile dressing and pressure bandage to Marvin's right thigh wound.
31. Before bandaging, use a sterile dressing to push the ends of the thighbone back into the wound.
32. Splint Marvin's broken right thigh with an inflatable air splint.
33. Apply board splints to Marvin's right leg before you lift him onto the stretcher.
34. Splint Marvin's lower left leg with an inflatable air splint.
35. Lift Marvin onto the stretcher before you splint his broken legs.

**When you have made your selection(s), do the next question.**

**Question H**

You now have Marvin fully immobilized on the stretcher. Both of his legs are properly splinted. Your pressure bandage has stopped the bleeding from his right thigh. You, Marvin, and your two helpers are still beside the pickup truck about 70 feet from the highwall. What should you do now? (Select as MANY as you think are correct.)

- 36. Leave Marvin on the stretcher, and wait for the ambulance.
- 37. Move Marvin further away from the highwall to a safer place and wait for the ambulance.
- 38. While you wait for the ambulance, talk to Marvin. Reassure him and tell him what you are doing to care for him.
- 39. While you wait for the ambulance, cover Marvin with a blanket and raise the foot end of the stretcher about 12 inches.
- 40. Put Marvin in the pickup truck and take him to meet the ambulance.
- 41. Continue to monitor Marvin's breathing.

**When you have made your selection(s), do the next question.**

**Question I**

As you wait for the ambulance to arrive, Marvin starts to vomit. He is still unconscious. 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.

The ambulance arrived in a few minutes. Later, when the front-end loader was backed away from the highwall, several tons of rock fell and covered the spot where Marvin was pinned before you rescued him. He survived because you carried out good rescue and first aid procedures. Incorrect actions might have killed him and his rescuers. Improper first aid might also have resulted in his death.

### **Question J**

List all violations of state and federal laws and your company rules that you can find in this problem. Write your list on the blank lines on the answer sheet.

### **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 27. 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 of 45 results from selecting all the correct answers and no wrong answers. The worst possible score of zero results from selecting all the wrong answers and no correct answers.