1. What do shoulder launched munitions include?
    a. The M136 AT4 light antiarmor weapon, the M72-series light antiarmor weapon (LAW), improved M72-series LAW, and the M141 bunker defeat munition (BDM) (a shoulder-launched, multipurpose assault weapon-disposable
2. The M72-series LAW (M72A2 and M72A3) was introduced in the early 1960s for use against what targets?
    a. Light tanks of that era
3. More recent and improved versions of the M72-series LAWs were produced in the 1990s and include what?
    a. M72A4, M72A5, M72A6, and M72A7
4. The M136 AT4 was designed in the late 1980s for what?
    a. Use against the improved armor of light armored vehicles
5. What is the M141 BDM? What is it used for?
    a. Was developed in the early 1990s primarily to use against bunkers
6. Shoulder-launched munitions are issued as rounds of ammunition. How are shoulder launched munitions designed to be maintained?
    a. The only requirement for their care is a visual inspection; this information is outlined in the appropriate chapter for each weapon.
7. In combat, live and expended shoulder-launched munitions are destroyed only to prevent their capture or use by the enemy and, even then, only on order. What conditions must be met in order for them to be destroyed?
    a. For such an order to be given, the weapons must be so badly damaged that neither repairs nor cannibalization can restore them to usable condition Table 1-1 provides destruction procedures for live and expended shoulder-launched munitions; Appendix A discusses safety precautions to follow when destroying them.
8. What is the M136?
    a. The M136 AT4 is a lightweight, self-contained, antiarmor weapon. It consists of a free-flight, fin-stabilized, rocket-type cartridge packed in an expendable, one-piece, fiberglass-wrapped tube The M136 AT4 is man-portable and fired from the right shoulder only. The launcher is watertight for ease of transportation and storage. Though the M136 AT4 can be employed in limited visibility, the firer must be able to see and identify the target and estimate the range. Unlike the M72-series LAW and the M141 BDM, the M136 AT4 launcher need not be extended before firing.
9. What are the specifications of the M136 launcher?
    a. Length: 1,020 millimeters (40 inches).
    b. Weight (complete system): 6.7 kilograms (14.8 pounds).
    c. Rear sight: range indicator, graduated in 50-meter increments.
10. What are the specifications of the M136 rocket?
    a. Caliber: 84 millimeters.
    b. Muzzle velocity: 290 meters per second (950 feet per second).
    c. Length: 460 millimeters (18 inches).
    d. Weight: 1.8 kilograms (4 pounds).

e. Minimum range:
f. ¾ Training: 30 meters (100 feet).
g. ¾ Combat: 15 meters (49 feet).
h. ¾ Arming: 15 meters (49 feet).
i. Maximum range: 2,100 meters (6,890 feet).
j. Maximum effective range: 300 meters (985 feet).

11. The M136 AT4 is a round of ammunition with an integral, rocket-type cartridge. What does the cartridge consist of?
    a. The cartridge consists of a fin assembly with tracer element; a point-initiating, base-detonating, piezoelectric fuze; a warhead body with liner; and a precision-shaped explosive charge
12. The M136 AT4's warhead has excellent penetration ability and lethal after-armor effects. How much armor can the warhead penetrate?
    a. The extremely destructive, 440-gram shaped-charge explosive penetrates more than 14 inches (35.6 centimeters) of armor.
13. What happens to the M136 upon impact?
    a. The nose cone crushes; the impact sensor activates the fuze. The piezoelectric fuze element activates the electric detonator. The booster detonates, initiating the main charge. The main charge fires and forces the warhead body liner into a directional gas jet that penetrates armor plate. The projectile fragments and incendiary effects produce blinding light and highly destructive results.
14. What do certain colored bands mean on an M136?
    a. M136 AT4 launchers are marked with color-coded bands (Figure 2-5). A black with yellow band indicates an HE antiarmor round (early models had a solid black band). A gold or yellow band indicates a field handling trainer (FHT); no band indicates an M287 9-mm tracer bullet trainer (Appendix B).
15. The M136 AT4 is issued as a round of ammunition rather than as a weapon; the launcher is completely sealed. However, its overall condition should be inspected at the time of issue and again before use (Figure 2-6). What should you look for when inspecting the M136?
    a. The wooden container should be opened, the plastic bags removed, and the launcher visually inspected for obvious damage. If the M136 AT4 is not to be used immediately, it should be returned to its plastic bag and the bag resealed with tape. The rear seal, a brown acrylic plastic plate inside the venturi, is in place and undamaged. The transport safety pin is in place and fully inserted. The lanyard is attached to the transport safety pin and the launcher. The lanyard should already be wrapped around the launcher clockwise and the transport safety pin inserted in the retainer hole counterclockwise. The cocking lever is present and in the SAFE (uncocked) position. The plastic fire-through muzzle cover is in place and undamaged. If it is torn or broken, cut it out and check the launch tube to ensure it is clear of foreign objects. Remove any that you find by turning the tube muzzle downward and gently shaking the launcher. The launcher has the correct color-coded band. The sights function properly. Open the sight covers to ensure the sights pop up and are undamaged. The forward safety does

not move when you depress it. The red trigger button is not missing. The launcher body has no cracks, dents, or bulges. The carrying sling is not frayed and is attached firmly to the launch tube. The shoulder stop is not broken or damaged, and it unsnaps and folds down.

16. How does the firing Mechanism of the M136 work? What are its components?
    a. The firing mechanism is mechanical and consists of a red trigger button, an enclosed firing rod and spring, and three safety devices: transport safety pin, cocking lever, and the forward safety (Figure 2-7). The weapon cannot be fired until all three safeties have been disengaged.
17. How do you operate the cocking lever on an M136?
    a. When the cocking lever, which is attached to the firing rod (Figure 2-8), is in the SAFE position, the firing rod and the trigger cannot touch. To cock the M136 AT4, push the lever forward and rotate it downward and to the right with your right thumb. This causes the hooks on the front of the firing rod to catch and hold the red trigger button.
18. How do you operate the safety mechanism on an M136?
    a. The forward safety is on the front end of the firing mechanism (Figure 2-9) and is connected to a steel rod with a bent end that blocks the firing rod from striking the firing pin. To fire the M136 AT4, hold down the forward safety so the firing rod can strike the percussion cap and ignite the propellant when you push the trigger.
19. How does the M136 front sight function?
    a. The front sight has a sight blade with a center post and left and right lead posts. A semicircular white line helps you obtain the proper sight picture. To open the front sight cover, press down on it and slide it backward until the sight pops up.
20. How does the M136 rear sight function?
    a. The rear sight has a sight blade, range adjustment knob, range scale, 2-mm peephole for normal daylight visibility conditions, and 7-mm peephole for limited visibility conditions. To open the rear sight cover, press down on it and slide it forward until the sight pops up.
21. If you are under fire, take cover before preparing the M136 AT4 for firing. How do you prepare the M136 for firing?
    a. Remove the M136 AT4 from its carrying position and cradle it in your left arm (Figure 2-12). With your right hand, pull and release the transport safety pin (Figure 2-13). This pin is important; you must reinsert it if you do not fire the launcher. Therefore, unless it is attached to
    b. the launcher with a lanyard, you must keep it in a safe place. Unsnap, unfold, and hold the shoulder stop with your right hand (Figure 2-14). Place the launcher on your right shoulder and stabilize it by grasping the sling near the launcher's muzzle with your left hand. With the M136 AT4 on your right shoulder, stabilize it with your left hand and open the sights with your right hand. Press down and pull backward on the front sight cover until the front sight pops up (Figure 2-15), then press down and forward on the rear sight cover until the rear sight pops up. The rear sight should be no less than 2 1/2 inches and no more than 3 inches from your eyes. Set the rear sight for the correct range to the target. Check the

backblast area before you cock the launcher. Then, unfold the cocking lever with your right hand (Figure 2-16). Place your thumb under it and, with the support of your fingers in front of the firing mechanism, push it forward, rotate it downward and to the right, and let it

c. slide backward.

22. What is a misfire? What is the proper procedure for dealing with a misfire?
    a. A misfire is a complete failure to fire caused by a procedural or mechanical failure. Choosing the proper misfire procedure depends on whether the firer is in a combat or training environment. Point misfired M136 AT4 launchers away from personnel and equipment, and notify EOD. Do not return misfired M136 AT4 launchers to the ASP. Disarm (uncock) the M136 AT4 launcher and insert the transport safety pin. If the transport safety pin cannot be reinserted or if the pin is missing, notify EOD. The forward safety is not depressed far enough to disengage the safety. The firing mechanism is faulty. The propelling charge explosive train is faulty.
23. If a misfire occurs in combat, the firer responds as follows:
    a. If the M136 AT4 launcher is armed (cocked), keep it pointed away from personnel and equipment at all times. Release the forward safety. Remove your right hand from the firing mechanism and cock the weapon again. Try to fire again. If the launcher still does not fire, maintain the same firing position and return the cocking lever to the SAFE (uncocked) position. Move the launcher from your shoulder, keeping the launcher pointed toward the enemy. Reinsert the transport safety pin. Break off the sights to identify the misfired launcher.
    b. Place the launcher on the ground, pointed toward the enemy, and use another launcher. As soon as you can, dispose of the misfired launcher IAW unit SOP.
24. If a misfire occurs on a live-fire training range, the firer responds as follows:
    a. If the M136 AT4 launcher is armed (cocked), keep it pointed away from personnel and equipment at all times. Shout "Misfire" as soon as the launcher fails to fire, while maintaining the original sight picture. Release the forward safety. Recock the launcher. Immediately remove right hand from the firing mechanism and push the cocking lever forward with the heel of the right hand until the lever locks with a loud clicking Noise. Press the forward safety all the way down and try to fire again. If the launcher still fails to fire, shout misfire, release the forward safety, and move the cocking lever to the SAFE (uncocked) position. Move the launcher from shoulder, keeping the weapon pointed toward the target and cradle the weapon in the left arm. Reinsert the transport safety pin, wait two minutes, then carefully lay the launcher on the ground with the muzzle toward the target.
25. If the launcher is prepared to fire, but then is not fired, it must be taken out of operation as follows:
    a. Release the forward safety.
    b. Push forward and to the left on the cocking lever, and let it spring back into the SAFE (uncocked) position.
    c. Move the launcher from your shoulder, ensuring the muzzle is pointed in the direction of fire.

d. With the launcher cradled in your left arm, replace the transport safety pin until it is fully seated in the retainer hole.
e. To avoid breaking off the rear sight, remember to reset the range indicator to the 200-meter setting before closing the rear sight cover.
f. Lay down the sights and close their covers.
g. Snap the shoulder stop into the closed position.
h. Sling the launcher over your right shoulder and move to another location.

26. How do you maintain a steady aim while operating the M136?
    a. Maintaining a steady hold involves holding the launcher as steady as possible while sighting and firing. To maintain the proper sight picture and sight alignment until you fire, hold the launcher in a tight, comfortable position so that it becomes a natural extension of your body (Figure 3-1). Keep your elbows close to your body to help balance the weapon and prevent you from jerking or flinching when you fire. With your left hand, grasp the carrying sling where it attaches to the launcher near the muzzle. With your right hand on the trigger mechanism, pull the shoulder stop into your right shoulder pocket.
27. What is considered proper eye placement while operating the M136?
    a. Estimate the range before sighting the weapon (Chapter 7). Place your firing eye between 2 1/2 to 3 inches from the rear sight. This distance is necessary for correct sight alignment and to prevent injury to the firer from the weapon's recoil (Figure 3-2).
28. What is considered proper sight alignment when operating the M136?
    a. Align the sights correctly with the target. Position the rear sight so that the white semicircle of the front sight is a hazy line around the bottom half of the rear sight opening. Position the front sight posts on the target (Figure 3-3). Align the sight by moving your head forward or backward.
29. What are considered stationary targets? How are stationary targets engaged?
    a. Stationary targets include fixed positions and fortifications as well as vehicles moving directly toward or away from the firer. Adjust the rear sight for the correct range and place the center sight post in the center of the target (Figure 3-4).
30. What are considered slow moving vehicles?
    a. How are they to be engaged with the M136?Slow-moving vehicles are those with an estimated speed of 10 miles per hour or less or those moving in an oblique direction. Place the center sight post on the front or leading edge of the vehicle (Figure 3-5, page 3-4).
31. What are considered fast moving vehicles? How are they to be engaged with the M136?
    a. Fast-moving vehicles are those estimated to be moving faster than 10 miles per hour. Place either the left or right lead post on the center of the target. For example, if the target is moving from left to right, place the left lead post on the target's center of mass, and vice versa (Figure 3-6).
32. Is breath control important when aiming the M136?
    a. Breath control is as important when firing the M136 AT4 as it is when firing an individual weapon. Improper breath control while firing can cause a miss. To

control breathing, the firer breathes deeply a couple of times, takes one last deep breath, exhales partly, holds his breath, sights, and then fires.

33. How is the trigger mechanism operated when using the M136?
    a. To fire the M136 AT4, the firer must apply firm and steady forward pressure to the trigger with the thumb of the firing hand (Figure 3-7). Soldiers can practice trigger manipulation and control techniques on an expended launcher or FHT.
34. Why is correct sight alignment critical to accurate use of the M136?
    a. Correct sight alignment is critical, as sight alignment errors increase as the range to the target increases. Maintaining the correct relationship between the rear and front sights is as important as placing the aiming point. The steps for doing this should become automatic. No matter how quickly they are done, these steps are always distinct because the human eye can only focus at one distance and on one point at a time. The firer focuses on the front sight to obtain the correct sight alignment, and then places the aiming point to complete the sight picture. He shifts or adjusts the position of the launcher as necessary. The entire time he is pressing the trigger, the firer maintains the sight picture.
35. What are the two standing positions used when operating the M136?
    a. A basic standing position and one modified for the infantry fighting position for use in combat only
36. What is the basic standing position when using the M136?
    a. Raise the launcher slightly higher than shoulder level. Execute a left face, rotate your shoulder under the launcher, and spread your feet a comfortable distance apart. Move your left foot 15 to 24 inches forward, keeping your hips level and your weight balanced on both feet. To obtain a firm, stable position, tuck both elbows tightly into your body (Figure 4-1, page 4-2). To smoothly track a moving target, turn your body at the waist—not with your legs. Grasp the sling near the launcher with your left hand and the shoulder stop with your right hand. Raise the launcher above shoulder level. After placing the launcher on your shoulder, release the shoulder stop and place your right hand on the trigger. Place your firing eye 2 1/2 to 3 inches from the rear sight. Unless you are behind a protective barrier, such as a wall, the standing position exposes you to enemy observation and possible suppression more than any other position.
37. What is the modified position when using the M136?
    a. Use this position when you occupy an infantry fighting position. Assume the basic standing position, but instead of stepping forward, lean against the back wall of the fighting position. Ensure that the venturi, or rear of the weapon, extends beyond the rear of the fighting position (Figure 4-2). Ensure that NONE of the following are in your backblast area:
    b. Other Soldiers.
    c. Other fighting positions.
    d. Equipment.
    e. Any part of your own fighting position.
    f. Obstructions within 5 meters.

38. The basic kneeling position is the best position for tracking moving targets. How do you assume a kneeling position?
    a. The modified kneeling position is best for engaging stationary targets, since it is a supported position. However, either can be used for stationary or moving targets.
39. How do you assume a basic kneeling position?
    a. From the basic standing position, kneel onto your right knee, keeping your left thigh parallel to the ground. Rotate your lower right leg 90 degrees to the left. (This removes your right foot from exposure to the backblast.) Keep your right thigh and back straight and perpendicular to the ground. Point your left foot in the direction of fire and tuck your elbows in to your sides. Though this is not a supported position, it should be a firm and stable one (Figure 4-3, page 4-4).
40. What is a modified kneeling position? How do you assume a modified kneeling position?
    a. From the basic kneeling position, sit back on your right heel. Place the back of your upper left arm on your left knee, making sure you do not have bone-to-bone contact between your left elbow and left knee. Keep your right elbow tucked in close to your right side. Use any protective barriers available (Figure 4-4).
41. When should the prone position be used when firing a shoulder launched munition?
    a. The prone position is the most dangerous position in regards to potential backblast injury, due to its proximity to the ground. It also offers the most protection from enemy observation. Ideally, the ground should slope downward from the rear of the launcher, which reduces the effects of the backblast.
42. How should you assume a prone firing position?
    a. Lie on your stomach with your body at a 90-degree angle to the direction of fire, and with your body and legs to the left of the direction of fire. Ensure that neither the body nor the legs are in the backblast area. Unlike other firing positions, this one prevents you from placing the launcher on your right shoulder. Instead, you must hold the launcher in place against your upper right arm. For stability, apply extra pressure on the firing mechanism with your right hand. The prone position is the least stable of all firing positions for the M136 AT4. You must practice it often to become confident using it. (Figure 4-7 shows the prone position.)
43. What is the M72A2/A3 LAW?
    a. M72A2/A3 LAW is a lightweight, self-contained, antiarmor weapon consisting of a rocket
    b. packed in a launcher (Figure 5-1). It is man-portable, may be fired from either shoulder, and is issued as a round of ammunition. It requires little from the user–only a visual inspection and some operator maintenance. The launcher, which consists of two tubes, one inside the other, serves as a watertight packing container for the rocket and houses a percussion-type firing mechanism that activates the rocket.
44. What is the description for the M72 outer tube?
    a. The trigger housing assembly (which contains the trigger assembly) is on the upper surface of the outer tube. So are the front and rear sight assemblies, the trigger arming handle, and the launcher's rear cover.

45. What is the description for the M72 inner tube?
    a. The inner tube telescopes outward toward the rear, guided by a channel assembly that rides in an alignment slot in the outer tube's trigger housing assembly. The channel assembly also houses the firing pin rod assembly, which includes a detent lever assembly. The detent lever assembly moves under the trigger assembly in the outer tube, locking the inner tube in the extended position and cocking the weapon. All this must occur before the weapon can be fired.
46. What is the description for the M72 rocket?
    a. The rocket is a percussion-ignited, fin-stabilized, fixed munition. The rocket is attached by the igniter to the inside of the launcher. The rocket consists of a 66-mm high-explosive antiarmor (HEAT) warhead; a point-initiating, base-detonating fuze; and a rocket motor. Six spring-loaded fins are attached to the rear of the rocket motor. These fins are folded forward along the motor when the rocket is in the launcher. When ignited, the propellant in the rocket motor burns completely, producing gases about 1,400 degrees Fahrenheit (760 degrees Centigrade). The gas pressure pushes the rocket toward the target and exits to the rear of the launcher as the backblast.
47. What is the description for the M72 launcher?
    a. Length (extended): Less than 1 meter (34.67 inches)
    b. Length (closed): 0.67 meter (24.8 inches)
    c. Weight (complete M72A2): 2.3 kilograms (5.1 pounds)
    d. Weight (complete M72A3): 2.5 kilograms (5.5 pounds)
    e. Firing mechanism: Percussion
    f. Front sight: Reticle graduated in 25-meter range increments
    g. Rear sight: Peep sight adjusts automatically to temperature change
48. What are the specifications for the 66MM Rocket?
    a. Length: 50.8 centimeters (20 inches)
    b. Weight: 1.8 kilograms (2.2 pounds)
    c. Muzzle velocity: 144.8 meters per second (475 feet per second)
    d. Minimum range (combat): 10 meters (33 feet)
    e. Minimum arming range: 10 meters (33 feet)
    f. Maximum range: 1,000 meters (3,300 feet)
    g. Maximum effective ranges:
    h. Stationary target: 200 meters (660 feet)
    i. Moving target: 165 meters (541 feet)
    j. (Beyond these ranges, there is less than a fifty percent chance of hitting the target.)
49. What are the specifications for the 66MM Ammunition?
    a. The M72A2/A3 LAW is issued as a round of ammunition. It contains a nonadjustable propelling charge and a rocket. Every M72A2/A3 has an integral HEAT warhead in the rocket's head (or body) section. The fuse and booster are in the rocket's closure section. The propellant, its igniter, and the fin assembly are in the rocket's motor. No inert versions are available (Figure 5-2). Appendix B provides information about appropriate gunnery training devices and ammunition.

Although the M72A2/A3 is mainly used as an antiarmor weapon it may be used with limited success against secondary targets such as gun emplacements, pillboxes, buildings, or light vehicles. Chapter 7 provides more information about combat techniques.

50. What is the improved M72 light antiarmor weapon system?
    a. The improved M72 light antiarmor weapon system is a compact, light weight, single shot, and disposable weapon with a family of warheads optimized to defeat lightly armored vehicles and other hard targets at close combat ranges (Figure 5-3). The improved M72 light antiarmor weapon systems offer significantly enhanced capability beyond that of the combat-proven M72A3. The improved M72 light antiarmor weapon system consists of a 66-mm unguided rocket prepackaged at the factory in a telescoping, throw-away launcher. The system performance improvements include a higher velocity rocket motor that extends the weapon effective range, increased lethality warheads, lower more consistent trigger release force, rifle type sight system, and better overall system reliability and safety. The improved M72 is transportable by all forms of rail, air, road, and sea transport, including tactical wheeled and tracked vehicles, without any safety constraints, and is certified for air delivery by individual parachutist or by
    b. pallet. Issued as a round of ammunition, it requires no maintenance.
51. How does the M72 ignition switch work?
    a. The ogive crush switch activates the electric detonator. The booster detonates, initiating the main charge.
52. How does rocket penetration work?
    a. The main charge fires and forces the warhead body liner into a directional gas jet that penetrates armor plate.
53. What are the After-Armor Effects of a rocket?
    a. Spalling.
    b. The projectile fragments and incendiary effects produce blinding light and highly destructive results.
54. What are the characteristics of the M72 round?
    a. The head of the round is olive drab stenciled in yellow. The M412 fuze is drop-safe and bore-safe. Its minimum arming distance is about 33 feet (10 meters). Six stabilizing fins are attached as part of the motor. As the rocket clears the launcher, springs force open the fins, which stabilize the rocket in flight. Because the M72-series LAW is issued as a round of ammunition rather than as a weapon, inspection is limited to a visual examination of the sealed unit. Inspect the launcher's overall condition before preparing the launcher for use.
55. What needs to be checked when inspecting a M72 LAW?
    a. Check the body for dents, cracks, or bulges.
    b. Check the rubber boots covering the trigger bar and barrel detent for tears or punctures.
    c. Ensure the arming handle is present and on SAFE and that the pull pin is in place.

    d. Check the data plate for the phrase, W/COUPLER
56. What does the firing mechanism include?
    a. the trigger arming handle, the trigger assembly, and the firing pin rod assembly.
57. How does the M72 trigger arming handle function?
    a. The trigger arming handle is located forward of the trigger bar and has two positions: SAFE and
    b. ARM. Leave the trigger arming handle on SAFE until the launcher is in the correct firing position (Figure 5-9). To press the trigger, you must first pull the arming handle forward and lock it in the ARM position. The trigger assembly is on the top rear of the outer tube. To fire the launcher, press downward on the trigger bar.
58. How does the front sight work for the M72A2 AND M72A3 LAWS?
    a. The front sight has a raised vertical range line marked with ranges from 50 to 350 meters in 25-meter increments (Figure 5-11). Two curved stadia lines are etched on the front sights. Do not use the stadia lines on this sight to estimate range, because they are inaccurate. Lead indicators are located on either side of the stadia lines to help engage moving targets. On the M72A3, use the front sight illuminated range marks at the 100-meter and 150-meter points to help engage targets in low light.
59. How does the rear sight work for the M72A2 AND M72A3 LAWS?
    a. The rear sight consists of a steel bracket with a rubber boot and plastic peep sight. This sight automatically adjusts to changes in temperature (Figure 5-12), which means that its settings are unaffected by temperature.
60. How do you extend the rocket launcher?
    a. Remove the pull pin and rotate the rear cover downward so the front cover and adjustable sling assembly can fall free (Figures 5-17 and 5-18). Do not discard the sling assembly until after you fire the rocket. With your firing hand, grasp the rear sight cover and with your nonfiring hand, grasp the launcher forward of the barrel detent. Pull your hands sharply in opposite directions to extend the launcher (Figure 5-19). To ensure the launcher is fully extended and locked, try to close it (Figure 5-20, page 5-14). To fire the rocket launcher, raise it slightly above shoulder level, rotate your body under it, and place it on your shoulder. Check the backblast area, pull the trigger arming handle to the ARM position, aim the launcher, and depress the rubber boot on the trigger bar firmly to ensure the launcher fires (Figure 5-21). If the trigger arming handle will not remain in the ARM position, the launcher is not fully extended. Pressing the trigger bar causes the firing pin to strike the primer, which ignites the black powder in the flash tube, which in turn ignites the propellant in
    b. the rocket motor.
61. A misfire is usually caused by what factors?
    a. The launcher may not be fully extended.
    b. The trigger arming handle may not be armed.
    c. The firing mechanism or the propelling charge explosive train may be faulty.
62. What should happen if a misfire occurs during combat?

a. Squeeze the trigger again immediately. If the launcher still fails to fire, place the trigger arming handle on SAFE. Partly collapse the launcher, than extend it to cock it again. Place it on your shoulder, check the backblast area again, and then arm, aim, and fire the launcher. If the LAW still fails to fire, squeeze the trigger again and return the trigger arming handle to SAFE. Collapse the launcher, set it aside, and try another one. As soon as possible, dispose of the misfired LAW IAW unit SOP.

63. What should happen if an M72A2, M72A3, or M190 subcaliber device misfires on a live-fire training range?
    a. Squeeze the trigger again. If the launcher still fails to fire, keep the launcher on your shoulder, announce "Misfire," and wait 10 seconds. Place the trigger arming handle on SAFE. Move the launcher from your shoulder and wait one minute. Extend the launcher to cock it again, check the backblast area, place the launcher back on your shoulder, pull the arming handle to the ARM position, aim, and squeeze the trigger bar. If the launcher again fails to fire, wait 10 seconds before returning the trigger arming handle to the SAFE position. Keep the launcher trained on the target area at least one minute; DO NOT collapse the launcher. Move the launcher to a safe area and dispose of it IAW unit SOP.
64. If the launcher is prepared to fire, but then is not fired, it should be returned to the carrying configuration by reversing the preparation procedure. How do you reverse the preparation procedure?
    a. After the launcher has been prepared for firing, it is no longer watertight. Therefore, when carrying the launcher, sling it over either shoulder with the muzzle (forward) end down. Only the rocket and rocket motor ignition system are waterproof. Return the trigger arming handle to the SAFE position. Remove the launcher from your shoulder, depress the barrel detent, collapse the launcher tube, and guide the front and rear sights into position. Close the rear cover, replace the cover pull pin, and replace the sling assembly.
65. Maintaining a steady hold involves holding the launcher as steady as possible while sighting and firing. How do you maintain proper sight picture and sight alignment until firing?
    a. To maintain the proper sight picture and sight alignment until firing, the firer must hold the launcher in a tight, comfortable position so that it becomes a natural extension of his body (Figure 5-22). Keep your elbows close to your body to help balance the weapon and prevent jerking or flinching when you fire. Place your left hand, palm facing upward, under the launcher near the muzzle and grasp the launcher. Firmly pull the rear cover into your right shoulder pocket.
66. What do aiming procedures include?
    a. Placing the eye correctly, obtaining a sight picture, and aligning the sight.
    b. Combining these procedures is critical to correctly aiming light antiarmor weapons.
    c. Position the front sight on the target. Stationary targets include those moving directly toward or away from the firer. Place the correct vertical range line in the center of the target (Figure 5-25, page 5-18). Slow-moving targets include those

with an estimated speed of 5 miles per hour or slower, or those moving in an oblique direction. Place either the left or right lead cross mark on the vehicle's center of mass.

67. What do fast moving targets include?
    a. Targets with an estimated speed of more than 5 miles per hour. Place either the left or right lead cross mark on the leading edge of the vehicle (Figure 5-27, page 5-19).
68. Why is breath control as important when firing a light antiarmor weapon as it is when firing an individual weapon?
    a. Breathing can cause a miss. To control breathing, the firer breathes deeply a couple of times, takes one last deep breath, exhales partly, holds his breath, and then sights and fires. The front sight has three lead posts to help line up fast moving, slow moving, or stationary targets. The front sight is spring-loaded to automatically adjust for temperature-induced performance differences The rear sight is more like a standard gunner's sight; it has a range setting knob, a range indicator in 50-meter increments (Figure 5-30), and two apertures (peep holes), a daylight aperture and a low light aperture.
69. Why is correct sight alignment critical?
    a. Sight alignment errors are increased as the range to the target increases. Therefore, maintaining the correct relationship between the rear and front sights is as important as placing the aiming point. The steps for doing this should become automatic. No matter how quickly they are done, these steps are always distinct, because the human eye can only focus at one distance and on one point at a time. The firer focuses on the front sight to obtain correct sight alignment, then places the aiming point to complete the sight picture. He shifts or adjusts the position of the launcher as necessary. The whole time he is pressing the trigger, he maintains the sight picture.
70. What is the M141 BDM?
    a. The M141 BDM is a disposable, lightweight, self-contained, man-portable, shoulder-fired, high-explosive, multipurpose weapon that contains all gunner features and controls necessary to aim, fire, and engage targets. The weapon system consists of an unguided free-flight rocket, which is packed in an expendable, telescoping launcher that also serves as the storage container (Figure 6-1). It provides water resistant protection for the rocket during weapon storage, transportation, and use. All propulsion unit operation occurs within the launch tube. The M141 BDM is issued as a round of ammunition, requires no maintenance, and can only be fired from the gunner's right shoulder. The weapon system structure consists of inner and outer filament-wound composite tubes, which are stored one within the other to provide for a shorter carry length.
71. What is the M141 BDM designed for?
    a. The M141 BDM addresses the need to destroy hardened targets, such as bunkers and other fixed enemy positions, and incapacitate the enemy personnel located within these targets. Optimized for the close fight in the contemporary operating environment, the M141 BDM is effective at distances ranging from 15

to 300 meters. It can be employed effectively against double-reinforced concrete walls up to 8 inches thick, triple brick structures, and standard earth and timber bunkers. The M141 BDM can incapacitate threat personnel when employed against cave complexes. It can also perforate up to 20 millimeters of rolled homogenous steel, which provides a capability against lightly armored and thin-skinned vehicles.

72. What are some characteristics of the M141 outer assembly?
    a. carry sling, front and rear rifle-type sight assemblies, firing mechanism, shoulder stop, and NVD mounting rail. Bumpers are attached to the ends of each launcher tube to prevent weapon damage during handling and transportation (Figure 6-2).
73. How can the inner tube can be extended to the ready-to-fire position?
    a. Removing the transportation locking pin and pressing the tube detent button. The inner and outer tubes are locked together for firing by rotating the inner tube clockwise, which also completes an electrical connection between the firing mechanism and the rocket.
74. The technical data for the M141 BDM weapon system is as follows:
    a. Length (extended/ready to fire): 1,371 millimeters (54.8 inches).
    b. Length (closed/carry): 792 millimeters (31.8 inches).
    c. Weight (ready to fire): 7.12 kilograms (15.7 pounds).
    d. Weight (ready to fire): 7.12 kilograms (15.7 pounds).
    e. Front sight: rifle-type, 3 posts.
    f. Rear sight: peep (2-mm and 7-mm settings) with sight rack 100 to 500 meters in 50-meter
    g. increments.
    h. Rocket muzzle velocity: 217 meters per second (712 feet per second).
    i. Rocket diameter: 83 millimeter (3.26 inches).
    j. Minimum arming range: 15 meters.
    k. Maximum effective range: 300 meters.
    l. Maximum range: 500 meters.
    m. Operating temperature limits: -32° Centigrade to +49° Centigrade (-25° Fahrenheit to +120°
    n. Fahrenheit).
    o. Storage temperature limits: -45° Centigrade to +70° Centigrade (-50° F to +160° F).
    p. Firing instruction label: yellow printing.
    q. Color code: yellow band, HE warhead; gold band, inert field handling trainer.
    r. The M141 BDM is issued as a round of ammunition. It contains a nonadjustable propelling charge and a rocket. Every M141 BDM has an integral high-explosive, dual-mode warhead in the rocket's head. The fuze and adapter are in the rocket's closure section. The propellant, its igniter, and the fin assembly are in the rocket's motor (Figure 6-4, page 6-4).

75. What is the description for the M141 rocket?
    a. The 83-mm high-explosive, dual-mode assault rocket warhead consists of a dual-mode fuze, an aluminized composition A-3 explosive charge, and 2.38 pounds of explosive.
76. How does the M141 penetrate soft targets?
    a. Penetration of a soft target is enhanced by the high kinetic energy retained by the rocket as it impacts the target. The rocket motor case is located directly behind the warhead providing additional energy to drive the warhead into the target. The rocket configuration also provides directional stability as the rocket enters soft targets, which greatly enhances lethality, especially when engaging targets at oblique angles. This directional stability after impact keeps the rocket from deflecting away from the target wall.
77. The head of the round and the tail section are silver and the motor case is black. Its minimum arming distance is 15 meters. What happens to the rocket during flight?
    a. Eight stabilizing fins are attached as part of the motor. As the rocket clears the launcher, springs force open the fins, which stabilize the rocket in flight. The fins are designed to produce a slow roll rate to reduce the rocket-on-target dispersion.
78. The M141 BDM weapon system is issued as a round of ammunition and requires no scheduled maintenance. What should you look for when inspecting the M141?
    a. Inspect the body for dents, cracks, gouges, or holes. Ensure the front and rear caps are present and there are no holes, tears or punctures. Ensure the front sight cover, rear sight cover, firing mechanism cover, tube release button cover, and shoulder stop cover are all present and not damaged. Ensure the front and rear sights and the shoulder strap are present and not damaged. Inspect the sling for signs of fraying. Gently shake the weapon and listen for sounds of loose or broken material inside the tube.
79. How does the front sight function for the M141 BDM?
    a. The front sight is a rifle-type sight that has three posts: a central post for engaging stationary targets, or moving targets head-on or straight away; and side posts to assist in engaging targets moving from the left or right. The front sight contains a white semicircle mark that will match the curve of the rear sight peep when properly aligned to assist in proper aiming.
80. How does the rear sight function for the M141 BDM?
    a. The rear sight consists of a 2-mm peep for use under normal daylight conditions and a 7-mm aperture for use under low light or flare illumination conditions. The rear sight is pre-set to open at the 150-meter battle sight range setting, and is adjustable in 50-meter increments out to 500 meters (Figure 6- 9).

81. How do you aim the M141 BDM?
    a. set the correct range on the rear sight, then sight through it. Place the top of the middle front sight post in the center of the rear sight aperture. Next, place the middle post on the center of mass of the target. The gunner's eye should be 8 to 9 inches from the rear sight when the weapon is properly positioned for firing. The white semicircle on the front sight will match the curve of the rear sight peep when the gunner is in the correct position (Figure 6-10).
82. A NVD mounting rail is permanently attached to each M141 BDM. The mount has an alignment groove that accepts the AN/PVS-4, AN/PAQ-4, and any other devices that use the rail grabber style mount, without the need for additional adapters or brackets. What are the mounting procedures for both the AN/PVS-4 and AN/PAQ-4?
    a. Employ the front sight by pushing the front sight cover forward, releasing the front sight.
    b. Remove the protective cover from the launcher nightsight mounting rail. Place the NVD in the nightsight mounting rail. Adjust the nightsight fore and aft until one of the mounting screws engages the threaded hole. Either of the M141 BDM nightsight mounting screws can be used for attaching the AN/PVS-4, depending on the sight relief distance desired by the gunner (Figure 6-11).
83. What is the night vision device boresighting procedure?
    a. The M141 BDM NVD mounting rail is positioned on the launcher to permit simple nightsight alignment to the weapon in the field. No special tools or equipment are required. These procedures will align the AN/PVS-4 and AN/PAQ-4 to each individual M141 BDM using the rifle sights. Select an object at a known distance from launcher A (distance of 150 meters is the minimum desired distance).The inner tube can be safely extended up to 36 inches in order to facilitate nightsight alignment without interference from the inner tube rear bumper. With the weapon system front and rear sights open, position the launcher on a stable surface such as a table or sandbags. Adjust the M141 BDM rear sight setting for the distance to the selected aiming object. Ensure the launcher front sight is level before adjusting the nightsight. Adjust the launcher position until the rifle sights are properly aimed at the selected aiming object. Adjust the nightsight until the aim point coincides with the launcher rifle sight picture on the selected aim point. The nightsight is now boresighted to the M141 BDM weapon at the selected range. The nightsight can be removed from the launcher and reattached at a later time and will still be correctly boresighted to that particular launcher. If the nightsight is attached to a different launcher, the boresight procedure must be repeated.
84. How do you prepare the M141 BDM for firing?
    a. Place the rocket launcher in the ready-to-fire position (Figure 6-14). Keeping the weapon muzzle pointed downrange, face to the rear and place the weapon under your left arm. Remove the transportation locking pin by pulling the lanyard or pin body. Depress the tube release button with your left thumb, grasp the rear tube (inner tube) just in front of the end cap with your right hand, and extend the inner tube rearward until it stops. A yellow band is visible at the inner tube front end when the tube is fully extended. Release the tube release button. Verify the inner

tube is locked by attempting to rotate the inner tube counterclockwise (opposite to the arrow). The launcher is now in the ready-to-fire position.

85. How do you fire the M141 BDM?
    a. Raise the weapon out and away from your body. Keep the weapon pointed downrange
    b. while pivoting your body 180 degrees to face the target, and place the weapon on your right Shoulder. Hold the center of the outer tube with your right hand, reach underneath the tube with your left hand, grasp the shoulder stop, and pull it rearward until it deploys from the shoulder stop cover. Reach forward with your left hand, grasp the front sight cover, press down and slide it rearward. With your left hand, grasp the rear sight cover, press down and slide it forward. Grasp the firing mechanism cover with your right hand and rotate the cover all the way forward until the cover is flush with the outer tube. The word ARMED can be seen in red letters when the cover is opened (Figure 6-16). Pull the shoulder stop against your shoulder, and adjust the rear sight for correct range. Check the backblast area, and aim the weapon at the target. Place the fingertips of your right hand on the safety button (located on top of the firing mechanism) and press down; then place your right thumb on the red trigger button. Press the trigger button forward with the thumb of your right hand until the weapon fires.
86. What is the sequence of events when the weapon is fired?
    a. Pressing the safety button and then the trigger button ignites the propelling charge; rocket motion begins (Figure 6-17). The propelling charge burns out before the rocket's exit. The rocket exits the launch tube. The rocket impacts the target and the warhead detonates. The M141 BDM can only be fired from the right shoulder. The M141 BDM may not be fired from the sitting position.
87. Of the weapons discussed in this manual, which is best used for engaging moving armored vehicles?
    a. The M136 AT4 is the best for engaging moving armored vehicles. One of its advantages is the speed of its round, which travels faster and farther than the other shoulder-launched munitions. However, the firer is the key in any engagement, especially a moving target engagement. Once firers learn to estimate speeds and engage moving targets at known ranges, they should rehearse until they achieve a high hit-to-kill ratio. Use the following procedures to estimate how far the vehicle travels in 1 second. Start when the front end of the vehicle passes the object. Count, "One thousand and one" (takes about one second). If more than half of the vehicle passes the object, estimate it as a fast-moving vehicle (10 miles per hour or faster). If less than half of the vehicle passes the object, estimate it as a slow-moving vehicle (less than 10 miles per hour).
88. Where is armor heaviest on vehicles?
89. Where are vehicles vulnerable to hits?
    a. Armored vehicles usually have their heaviest armor in front, because they are designed mainly for offensive operations against other armored vehicles. All vehicles are vulnerable to repeated hits on their flanks and rear, though the flank

offers the largest possible target. Firers should always aim center of mass to increase the probability of a hit. The older the vehicle model, the less protection it has against shoulder-launched munitions.

90. Newer versions may use bolt-on (appliqué) armor to improve their survivability. Some vehicles are equipped with reactive armor, which consists of metal plates and plastic explosives. How does reactive armor impact the use of shoulder launched munitions?
    a. Reactive armor usually covers the forward-facing portions and sides of the vehicle and can defeat shaped-charge weapons such as the M72-series LAW and the M136 AT4. When reactive armor detonates, it disperses metal fragments to 200 meters. The M72-series LAW and the M136 AT4 cause only a small entry hole in an armored vehicle target, though some fragmentation or spall may occur.
91. Natural or man-made obstacles can be used to force the armored vehicle to slow, stop, or change direction. What does this allow the firer to do?
    a. This pause enables the firer to achieve a first-round hit. If he does not achieve a catastrophic kill on the first round, he or another firer must be ready to engage the target vehicle immediately with another round.
92. An enemy armored vehicle without close protection (dismounted infantry) in woods, urban, or other restrictive terrain is vulnerable to close attack. What are armored vehicles most vulnerable from?
    a. A close attack is most likely to originate from well-armed infantry-type teams organized into armor-killer teams. (Non-infantry units may also be required to perform this mission). When an armored vehicle is buttoned up–all hatches are closed and personnel are inside the vehicle–the armored vehicle crew cannot see well enough to protect itself from close attacks or attacks from the flanks or rear. The personnel inside cannot see anything within 10 meters of the vehicle, and they cannot shoot at anything (using their main guns) within 20 meters.
93. How do Single Firer operations work?
    a. A single Soldier with one shoulder-launched munition may engage an armored vehicle, but this is not the preferred method of engagement. Several shoulder-launched munitions are required to kill an armored vehicle. A single firer firing one round must hit a vital part of the target to damage it at all (Figure 7-4). A single firer can engage targets out to 225 meters with the M72-series LAW or 300 meters with the M136
    b. AT4 when he knows the actual range.
94. How do sequence firing operations work?
    a. A single firer, equipped with two or more shoulder-launched munitions prepared for firing, engages the target. After engaging with the first round and observing the impact, the firer adjusts his point of aim, engages with another round, and so on until he destroys the target or runs out of rounds (Figure 7-5).
95. How do pair firing operations work?
    a. Two or more firers, equipped with two or more shoulder-launched munitions prepared for firing, engage a single target. Before firing, the first firer informs the others of the estimated speed and distance to the target. If the impact of his round proves his estimate to be correct, the other firers engage the target until it

is destroyed. If the impact of the round proves his estimate to be incorrect, the second firer informs the others of his own estimate, and then he engages the target. This continues until the target is destroyed or all rounds are expended (Figure 7-6).

96. How does volley firing work?
    a. Two or more firers can engage a single target when the range is known. These firers engage the target at the same time on a prearranged signal such as a command, whistle, booby trap, mine, or target reference point (TRP). This can be the most effective means of engagement as it places the most possible rounds on one target at one time, increasing the possibility of a kill (Figure 7-7).
97. What must Shoulder-launched munitions firers know?
    a. Designated firers.
    b. Target priority.
    c. Method of engagement.
    d. Range and lead to target (if known).
    e. Command or signal to fire.
    f. Command or signal to cease fire.
98. What munition systems are the M72 and M136 best used for?
    a. The M72-series LAW proves more effective against light vehicles; the M136 AT4 proves more effective against armored vehicles. Non-armored vehicles, such as trucks, cars, and boats, are considered soft targets. Firing along their length offers the greatest chance of a kill, because this type of shot is most likely to hit their engine block or fuel tank.
99. Are the M72 and M136 effective for use against field fortifications and buuldings?
    a. The M72-series LAW and the M136 AT4 have proven to have little effect against field fortifications and buildings. The M141 BDM was designed to better enhance the destruction of these fortifications. Its warhead contains a dual-mode fuze that automatically adjusts for the type of target on impact. For soft targets, such as sandbagged bunkers, the M141 BDM warhead automatically adjusts to delayed mode, hits the target with high kinetic energy; this energy propels the warhead through the barrier and into the fortification or building where the fuze detonates the warhead and causes greater damage. Soldiers should not expect to severely damage these type of targets with the M72-series LAW or M136
100. What are considerations for use of NVDs with the M136 and M141?
    a. Before an NVD can be used with the M136 AT4, it must be removed from its designated weapon (M249 machine gun or automatic weapon, or M60 machine gun) and the M136 AT4 mounting bracket must be attached. (Appendix F describes the various NVDs that can be used; it also gives information for mounting, boresighting, and zeroing procedures for each NVD.) The M141 BDM comes with an NVD mounting rail permanently attached.
101. How is artificial illumination designed to be used with shoulder fired munitions?
    a. If artificial illumination is used during a limited visibility engagement, it should be placed above and slightly beyond the target. The ability to identify and engage a target is less with artificial illumination than with NVDs.

102. How do you properly sight the weapon while wearing protective masks?
    a. To properly sight the weapon while wearing the protective mask, the firer may have to rotate the weapon slightly counterclockwise. The mask also makes determining the location, identity, and engageability of targets is more difficult.
103. Firing from an enclosure creates unique hazards. What are they?
104. What are considerations to make when firing from buuldings?
    a. As such, before positioning Soldiers in enclosures, leaders must consider several factors that affect safety. The M72-series LAW has been rated safe for use from an enclosure but, only when the enclosure meets the following minimum requirements.
    b. The building must be sturdily constructed to reduce the structural damage that would occur in a weakly constructed enclosure such as one made of wood or stucco.
    c. Minimum measurements for the enclosure are 12 by 15 feet.
105. Why is ventilation to the rear and sides important when firing inside an enclosure?
    a. To allow for the backblast, at least 20 square feet of ventilation, such as a standard 3-foot by 7-foot doorway, must be provided directly behind the firer. Doors and windows should be removed beside and behind the position to increase ventilation and reduce overpressure, noise, and blast effects. Without sufficient ventilation, the blast can weaken or collapse the walls. On the front wall, windows and doors need to be reinforced, rather than removed, because removing would draw attention to the position. Reinforcing the windows also helps protect the firer from enemy direct-fire weapons.
106. Why must you remove objects and debris from the firing area?
    a. Any objects or debris to the rear of the weapon must be removed to prevent them from flying around the room and possibly injuring personnel as a result of the backblast.
107. What is the muzzle clearance for shoulder fired weapons?
108. Why is muzzle clearance so important?
    a. Muzzle clearance must be at least 6 inches. Properly positioning the weapons within the enclosure is vital to the safety and survival of all personnel in the enclosure. The weapons should be positioned so that the maximum distance between the firer and the backblast impact area is achieved (see paragraph 7-23).
109. What are considerations for personnel positions when firing from an enclosure?
    a. If any other Soldiers are present, they must remain forward of the rear of the launcher and avoid standing in corners or near walls. If possible, they should construct reinforced positions that will protect them in case the building collapses. All elements, even those with other organic antiarmor weapons, use shoulder-launched munitions. Shoulder-launched munitions can influence the action in an attack, so units should routinely stock them beforehand.
110. They are most useful against lightly armored vehicles. What can they also be used against?

a. targets, such as bunkers, field fortifications, automobiles, and trucks, but their shaped-charge warheads have less effect on these than on armored targets. Unless personnel, ordnance, or flammable material on or inside them are hit, soft targets can normally continue to fight after being attacked by shoulder-launched weapons. Due to their relatively short range, shoulder-launched munitions should be placed throughout the attacking force. They support the maneuver by providing a base of fire, and they enable the assaulting force to engage in close antiarmor combat.

111. Shoulder-launched munitions are employed with interlocking fires to provide mutual support. What is the advantage of dispersion?
    a. Dispersion allows leaders the flexibility to place flank, rear, and oblique fires on targets. This procedure increases the survivability of the firers as well as the probability of achieving kills. Leaders must select positions that avoid fratricide from backblast and short rounds The squad and platoon leader's sector sketch identifies TRPs and primary areas of possible engagement. The sector sketch also identifies possible avenues of approach for enemy armored vehicles. Each shoulder-launched munition shares a sector of fire with the primary small-arms weapon assigned to its position. Because the shoulder-launched munition is neither a primary nor crew-served weapon, it does not require a separate range card. When assigning sectors of fire, squad and platoon leaders inform firers of all possible target areas, TRPs, and prearranged
    b. signals
112. Why are shoulder-launched munitions are used on combat patrols?
    a. destroy enemy equipment, installations, and key points, and to harass enemy forces. The two types of combat patrols are ambushes and raids.
113. How are shoulder launched munitions supposed to be used during ambushes?
    a. The commander can employ armor-killer teams either during limited visibility or when cover, concealment, and withdrawal routes are available. The key to ambushing armored or other vehicles is to choose terrain that restricts their maneuverability and fields of fire, while allowing friendly forces to engage the vehicles from the flank and rear. Soldiers can emplace antipersonnel mines before the ambush so that dismounting enemy Soldiers deploy into them. Though shoulder-launched munitions can be used independently, they are normally used in support of designated organic antiarmor weapons such as the M47 Dragon (FM 3-23.24). Volley firing shoulder-launched munitions increases the probability of a quick kill (Figure 7-9). Security teams are deployed to stop any enemy from escaping.

114. How can shoulder launched munitions be used for defense of Tactical Operations Centers and Unit Trains?
    a. The mobility of modern vehicles makes the TOC and unit trains prime targets for enemy attacks. Shoulder-launched munitions are used to engage vehicles threatening the unit during the defense of the TOC. Soldiers who use shoulder-launched munitions in this type of operation normally perform non infantry-type roles. Unit leaders designate Soldiers to carry shoulder-launched munitions and ensure that these Soldiers receive training on them.
115. How are shoulder launched munitions used for patrols of Rear Areas?
    a. Rear area patrols are security patrols conducted by designated infantry or military police (MP) units. These patrols can react to any threat they encounter in the rear area. Rear area patrols use the shoulder- launched munitions in a hasty point defense at a roadblock, intersection, or strongpoint.