

# How to Prepare for a Known Distance Event



This is a general guide to prepare for a Project Appleseed Known Distance event. Each range can be a little different. If something is significantly different from the advice in this guide, the Shoot Boss will reach out in advance and let you know.

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## **Finding & Signing Up for an Event**

### *Finding an Event*

A Known Distance event is an intermediate clinic for centerfire rifle shooters. We require attendance at a 25m Appleseed event prior to coming to a KD clinic. If you need to find a 25m event near you, check out our schedule here: <https://appleseedinfo.org/schedulemap/>

Direct links for other event types:

Rimfire Known Distance: <https://appleseedinfo.org/schedule/?eventtype=rkd>  
Known Distance Rifle: <https://appleseedinfo.org/schedule/?eventtype=kd>  
Appleseed Pistol Clinics: <https://appleseedinfo.org/schedule/?eventtype=pistol>  
Ladies Only events: <https://appleseedinfo.org/schedule/?eventtype=ladies>

### *Pricing*

Our current pricing can be found here: <https://appleseedinfo.org/pricing-information/>.

## **What to Bring**

This list is similar to the 25m event What to Bring list. Keep in mind that not all items are essential.

### *Personal Items*

- \*A Teachable Attitude (A desire to learn and improve and a mind open to new things are the most important things you can bring to the event.)
- \*Ear protection ( earmuffs and/or earplugs. Electronic ear muffs are helpful, but not essential.)
- \*Eye protection (clear shooting glasses are recommended. Impact resistant prescription glasses may be okay.)
- Shooting mat (a thick blanket or rug remnant can be used as a substitute)
- Tarp (for under the shooting mat to catch spent casings – this makes cleanup much easier)
- Elbow pads or elbow-padded shooting jacket (if you don't have elbow pads, take an old pair of socks and cut out the toes)
- Dress for the weather. We always shoot unless the weather is hazardous. (It rarely is.) Long sleeves and long pants are recommended. Low-cut shirts can collect hot brass; we recommend a crew-neck shirt.
- Closed-toe shoes are a necessity. Boots are recommended (no open-toe footwear)
- Weather-appropriate hat (360° brim for sun or with ear coverage for cold)
- Sufficient water - you must stay hydrated (1 gallon per person recommended)
- Trail mix or high-protein snacks (Protein is fuel. Sugary carbohydrates may make you sleepy.)
- Light, high-protein lunch (lunches at Project Appleseed are working lunches)
- Folding chair
- Wet wipes
- Sunscreen and bug spray
- Small notebook & pencil. A Sharpie is helpful as well to mark your targets.

### *Rifle-specific Items*

- \*A centerfire rifle, maximum caliber of 8mm, but some ranges may have other restrictions. (We recommend semi-automatic with detachable magazines, but bring what you have and learn! Zero the rifle at 25m or 100y if possible. Plan on sticking with one rifle for the weekend, but bring a backup rifle if you have one.)
- \*Iron/peep sights are not required at Project Appleseed. We are scope friendly!
- \*Ammunition: 400 (2-day event) or 200 (1-day event) rounds of the same type & brand of ammo (unless the Shoot Boss contacts you and recommends you bring a different quantity)
- \*2 magazines that hold at least 10 rounds, but bringing spares is recommended. (20-round mags OK if state law allows.)
- \*USGI style cotton web sling, 1 ¼"-wide
- Sight adjustment tool
- Rifle cleaning supplies (Boresnake and oil are encouraged)
- Trash bag and light-colored towel (to protect your rifle from sand, snow, rain, or intense sun)
- Staple gun & staples or packing tape to affix targets to backers.
- Rifle operator's manual & sight/scope manual, if you have them
- Rifle case

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\* Critical item.

## **Equipment Preparation**

### *Ready your Equipment*

- Prepare by packing light and be ready to walk like a Rifleman.
- Depending on the range facility, you may shoot on a concrete firing line. If we do, it's good to remember that concrete is HARD. Bring your shooting mat/blanket and some extra padding. An old towel will help save your elbows.
- Be prepared for seasonal and range conditions. Blowing sand and dust, rain, snow, and intense sun are all conditions you may encounter. In event of blowing sand and dust, you'll need to totally degrease your rifle in favor of a dry lubricant like graphite. Be ready to protect your rifle with a plastic bag or a simple waterproof wrap for the action.
- Protect ammo and mags from the same conditions. Ziplock bags are great for this.
- Have your rifle oiled appropriately (light oil) and ensure all fasteners are appropriately snug.
- Function-test your rifle. If possible, have it zeroed for 25m or 100y so that you will be properly prepared for the class.
- Review the owner's manual for your rifle on how to operate your rifle. Do the same for your sights/scope if they have a separate manual.

### *Special Equipment Considerations*

1. Legal short-barreled rifles are permitted, but not recommended for KD events. Select-fire rifles must stay on the "semi" setting.
2. Pistol caliber carbines are not permitted at Known Distance events as they are impractical at extended distances.
3. Legal suppressors are welcome at our events.
4. AR-type pistols (with or without stabilizing brace) are not permitted at Project Appleseed rifle events.

## **Safety**

Safety is paramount at Project Appleseed. You learned this safety information at your 25m rifle event, but it's provided for you as a refresher.

### *Project Appleseed's Four Safety Rules*

Project Appleseed has four event-specific safety rules. They are:

1. **Always Keep the Muzzle in a Safe Direction.** The muzzle is the pointy end of the rifle. It must always be kept in a safe direction, which is usually up or downrange. Host range rules may be more restrictive.
2. **Do Not Load Until Given the "Load" Command.** A student may insert a prepared magazine into the rifle only after he receives the "Load" command.
3. **Keep Your Finger Off the Trigger Until the Sights are On the Target.** A student should keep his finger straight alongside the stock until his sights are on the target (or target backer). At that point, he may place his finger on the trigger.
4. **Make Sure Those Around You Follow the Safety Rules.** We all share the responsibility that we all go home without any extra holes. If you see anything you remotely think might be a safety issue, immediately take corrective action!

Every Appleseed instructor and attendee is expected to abide by these rules.

### *"Safe Rifle"*

Throughout the day, you will be asked to make your rifle safe. We do this to ensure it is safe for us to go downrange and check targets.

In order, the steps to making a rifle safe are:

1. **Magazine Out.** Remove the magazine from the rifle.
2. **Bolt Back.** Lock the bolt to the rear.
3. **Safety On.** Engage the mechanical safety.
4. **Chamber Flag In.** Take the (provided) chamber flag and insert the stem through the ejection port and all the way into the chamber.
5. **Rifle Grounded.** Place the rifle on the ground with the ejection port up and the muzzle forward of the firing line.
6. **No One Touching the Rifle.** Neither the shooter nor any instructor will touch a rifle once the line is clear. Students will be clearly advised when it's time to handle rifles again.

### *A gentle reminder:*

1. *We do not transition with loaded rifles.*
2. *"Hot reloads" (shoot one & change the mag) are not permitted in any Project Appleseed rifle class.*

## **What to Expect**

### *Class Times*

Known Distance Clinics are normally scheduled to begin at 8:00 AM and will end no later than 5:30 PM. However, if times for the clinic you sign up for are different, the event leader (Shoot Boss) will contact you in advance. We'll try to get you out earlier if we can, but there is a lot of content and activities in this class. Please arrive at least 30 minutes early to fill out the paperwork and get set up.

### *Arriving*

When you arrive at your Project Appleseed event, we will attempt to meet you in the parking lot. We'll let you know where to park. Also, we'll ask you to leave all firearms (including concealed carry) in your car and give you directions to the check-in table.

### *Check-in*

Once you get to the check-in table, we'll have you take care of some boring paperwork. (It'll be short.) If range fees are required, they will be collected (cash only please) and remitted to the host range. We'll give you a chamber flag and a t-shirt. Then, we'll share directions to get to the firing line.

### *At the Firing Line*

You'll likely return to your car and retrieve your gear, EXCEPT for firearms. Someone will be at the firing line to help you pick out a spot. You'll place your shooting mat on the firing line and all your other gear behind the equipment line. After the safety briefing, you will be directed on when to retrieve your rifle.

### *Lunch*

Lunch at Project Appleseed is a "working lunch." There will not be time for you to leave the range to buy food. The host may provide lunch at a reasonable cost, but this is the exception rather than the norm.

### *Instruction*

At a Project Appleseed Known Distance event, you will receive instruction and practice at employing your centerfire rifle out to distances of at least 400 yards. KD events are shot at 100, 200, 300, and 400 yards. Expect a fair amount of walking to check targets. During lunches and breaks, we'll tell stories of heroes of the Revolutionary War.

At this clinic, you have the opportunity to earn your Rifleman Patch, if you have not already done so. Also, you have the opportunity to earn your Known Distance Bar. Expect to gather data about your rifle and ammo. You'll learn about negotiating wind and, conditions permitting, get practical experience shooting in the wind.

At a 2-day KD event, you should expect to receive instruction in Target Detection and Range Estimation, with a practical exercise in the latter.

## Known Distance Read-Ahead

### *Range Estimation*

To effectively estimate range to an object, a Rifleman must know two things:

First, he must know the size of the front sight in minute of angle. (Width or height)

Second, he must know the size of the object in inches. (Width or height)

A simple equation to determine range is:  $\text{Range (100s yards)} = \text{Target size (inches)} / \text{Target size (MOA)}$

Example 1: Front sight is 8 minutes wide. Object is 24 inches across. Object is 1.5 times wider than front sight, (12 minutes). 24 divided by 12 is 2. Range is 200 yards.

Example 2: Same sights, same sized object. Target measures 1/2 the width of the front sight, (4 minutes). 24 divided by 4 is 6. Range is 600 yards.

### *Come-ups for Centerfire Rifles*

The come-ups listed below are approximate. They should get you on paper but may need to be fine-tuned for any particular rifle. Once determined, they should be written down and attached to the rifle being used.

<b>Come-Ups for Centerfire Rifles</b>				
<b>Distance</b>	<b>M14</b>	<b>AR15</b>	<b>M1</b>	<b>AK-47</b>
100 to 200	3	2	2	3
200 to 300	3	2	3	5
300 to 400	3	3	4	6
400 to 500	4	4	4	8
500 to 600	5	5	4	*

*For almost any common center fire rifle cartridge, the values for the M14 will be good enough to get you on paper.*

### *Reading and Adjusting for Wind*

A Rimfire KD event can be a great opportunity to learn about shooting in the wind.

Steps to compensating for wind:

1. Estimate wind speed (in MPH)
2. Estimate the angle of the wind in reference to the shooter.
3. Determine the winds "value" (1/2, Full, or Zero)
4. Determine the wind correction
5. Apply the correction to the rear sight, or "hold-off".

The details of these steps follow.

Step 1. Estimate Wind Speed

- Estimate wind speed using handy objects: Drop a light object and estimate the angle at which it falls, then, divide by 4.

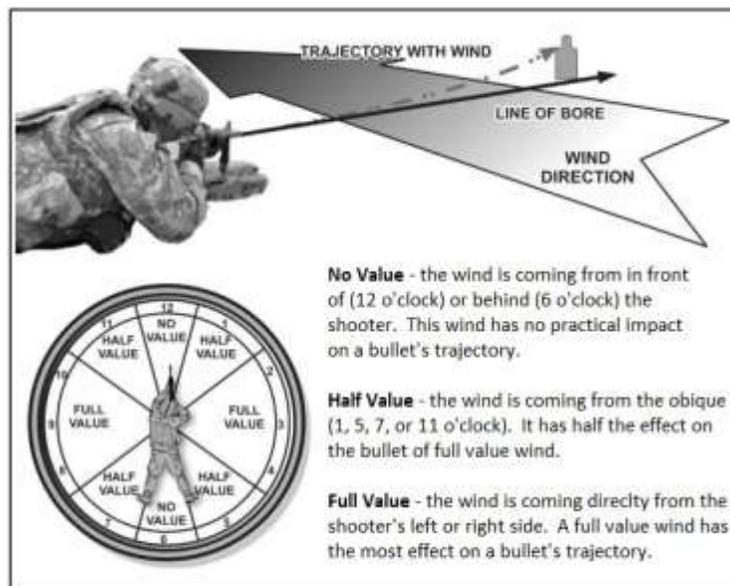
Example: Object drops at 40-degree angle, divided by 4 is 10, so wind velocity is approximately 10 mph.

- Alternatively, estimate wind speed using natural effects:

No movement, smoke rises straight up	Under 1 mph
Direction of wind shown by smoke, Tree leaves barely move	1 to 3 mph
Wind felt on face, Leaves rustle slightly	4 to 7 mph
Leaves and twigs are moving. Loose bits of paper are lifted and ruffled	8 to 12 mph
Small branches are moved, loose dust and paper are blown along	13 to 18 mph
Large branches and small trees sway, dust clouds	19 to 24 mph
Large branches in constant motion, wind begins to whistle	25 to 31 mph
Whole trees are in motion, Walking is affected	32 to 38 mph

Steps 2 & 3. Estimate Wind Direction and Determine Value

The direction of the wind in relation to the path of the bullet determines how much effect it has on the bullet's path.



Graphic credit: U.S. Army Training Circular 3-22.9, C2. 31 August 2017.

Step 4. Determine the wind correction using the following formula:

- Correction in MOA = Wind Value x 100s of yards x 10s of mph of wind x Wind Value

Step 5. Apply the correction and take the shot

- For constant/steady winds, adjust the sight the number of MOA into the wind.
- For variable winds, hold off by estimating the number of MOA using your front sight post or reticle