

# How to Prepare for a Rimfire Known Distance Event



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

*Most factory rifles are capable of the accuracy required to complete this course successfully – match grade gear not required. We require you have attended a 25 event before coming to an RKD event. We assume you are confident & practiced in the fundamentals from your 25m event.*

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

### *Finding an Event*

A Rimfire KD event is an intermediate clinic for rimfire rifle shooters. We require attendance at a 25m Appleseed event prior to coming to a RKD 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:

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

### *Pricing*

Read about our current pricing here: <https://appleseedinfo.org/pricing-information/>.

### *After Appleseed...*

Once you have attended your class, consider joining us to help pass on what you have learned to other Americans. Volunteer opportunities for both instructors and supporters are available! Ask your event leader how to join us!

## **What to Bring**

This list is very 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 (We recommend clear shooting glasses. Impact resistant prescription glasses may be okay.)
- Shooting mat (You can substitute a thick blanket or rug remnant.)
- 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 off the toes)
- Dress for the weather. We shoot unless the weather is hazardous. (It rarely is.) We recommend long sleeves and long pants. We recommend a crew-neck shirt, as low-cut shirts can catch hot brass. Closed-toe shoes are a necessity.
- 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*

- \*Rimfire rifle (This class is structured for rifles chambered in .22 Long Rifle, but other rimfire calibers are welcome if range rules permit them. We recommend rifles with detachable magazines. Zero the rifle at 25m or 50y if possible. Plan on sticking with one rifle for the weekend, but bring a backup rifle if you have one.)
- \*USGI style cotton web sling, 1-¼" wide. **Much of our teaching centers around the use of this sling!** Tactical slings can be used but are not ideal.
- \*We recommend scopes for the Rimfire KD class, but shooters can be successful with iron sights. If you are using a scope, see the next page!! Red dot sights are not recommended for this class.
- \*Ammunition: 450 (2-day) or 250 (1-day) rounds of the same type & brand of ammo (better to have too much than not enough) unless the Shoot Boss contacts you and recommends you bring more.
- \*2 magazines that hold at least 10 rounds, though we recommend you bring spares.
- Sight adjustment tool
- Rifle cleaning supplies. (Bore snake and rifle oil are helpful.)
- Trash bag and light-colored towel (to protect your rifle from sand, snow, rain, or intense sun)
- Large pushpins (preferred) or a staple gun & staples
- Rifle operator's manual & sight/scope manual, if you have them
- Rifle case (recommended)

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\* Critical item.

## **Equipment Preparation**

### *Ready your Equipment*

- 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 50y.
- Read the owner's manual for your rifle on how to operate your rifle.

### *Scope Info*

- Considering using a rail or mount that will place your scope far enough forward for you to be comfortable in the prone position & see clearly through the scope.
- Read & bring the owner's manual for your sights/scope.
- ***SPECIAL NOTE:*** *If you are shooting a scoped rifle for the 200y RKD, please ensure that you have at least 30 MOA of elevation available from your 25m zero.*
  - *If you have a scope with capped turrets and a BDC reticle, you should be fine.*
  - *If you have a traditional scope and +20 MOA rail/mount on your rifle, you should be fine.*
  - *If you have a traditional scope and standard (0 MOA) rail/mount, do the following:*
    - *From your 25m zero, turn the elevation knob and count up 30 minutes.*
    - *If the knob starts to tighten or feel sloppy - stop! Prevent damage to your optic by not turning past the normal range of adjustment.*
    - *If your scope (w/standard rail) will not dial up 30 MOA, you may struggle to find a good hold at 200y.*
    - *Return to your 25m zero before arriving.*

### *Special Equipment Considerations*

1. Due to a firearms safety bulletin, we do not recommend .17HMR semi-automatic rifles.
2. Owners of the Smith & Wesson M&P 15-22 rifles must comply with the Smith & Wesson Safety Alert. We will make every effort to have a S&W Bolt Inspection Gauge on-hand for owners to check their bolts for compliance. We encourage you to review the following links to the Smith & Wesson websites for information about the Safety Alert and how to check the M&P 15-22 bolt to determine that it is within specification:
  - <https://www.smith-wesson.com/mp15-22-consumer-safety-alert>
  - [https://www.smith-wesson.com/sites/default/files/MP1522\\_Alert\\_030619.pdf](https://www.smith-wesson.com/sites/default/files/MP1522_Alert_030619.pdf)
  - See this video on how to check your S&W rifle. [https://youtu.be/UJO0gJRmc\\_c](https://youtu.be/UJO0gJRmc_c)
3. Project Appleseed requires an additional liability waiver for any student at a Project Appleseed clinic who chooses to use a semi-automatic .17HMR rifle or a Smith & Wesson M&P 15-22 firearm.
4. We permit legal short-barreled rifles and pistol caliber carbines up to .45 caliber at our events. Select-fire rifles must stay on the "semi" setting.
5. Legal suppressors are welcome at our events.
6. AR-type pistols are not suitable for use at Project Appleseed events.

## **Safety**

Safety is paramount at Project Appleseed. We will cover the below information at the beginning of our class, but it's provided here for those who would like to read up on it.

### *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. You must keep it 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!

We expect every student and Appleseed instructor to abide by these rules.

### *"Safe Rifle"*

Throughout the day, we will ask you 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 student nor any instructor will touch a rifle once the line is clear. We will clearly advise students when it's time to handle rifles again.

### *A gentle reminder:*

1. *We do not transition (move from standing to prone or sitting/kneeling) 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*

Rimfire Known Distance Clinics *normally* begin at 8:00 AM and end by 5:30 PM. However, if times for your class are different, the event leader (Shoot Boss) will contact you in advance. We'll try to get you out earlier if we can. 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, we will inform you when it's time 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 Rimfire KD event, you will receive instruction and practice at employing your rimfire rifle out to distances of up to 200 yards. At KD events, you will shoot at 50, 100, 150, and 200 yards. If 200 yards is not available, you may shoot a reduced course out to 100 yards. Expect there will be some walking to check targets. During lunches and breaks, you'll hear stories of heroes of the Revolutionary War.

You will have the opportunity to earn your Rifleman Patch, if you have not already done so. Also, you have the opportunity to earn your Rimfire KD bar. To qualify for a Rimfire KD bar, you must use a rifle chambered in .22 Long Rifle. Other rimfire calibers are welcome, but are ineligible for the RKD patch.

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 Rimfire 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

*Come-ups for 200- and 100-yard classes*

<b>200y Rimfire KD Ammunition Come-Ups (in MOA), Sight Height 1.9"</b>						
Distance	Eley Target 40g	Blazer 40g HV	Federal Automatch	CCI Standard Velocity	Average	My Come Ups
<b>50</b>	0	0	0	0	<b>0</b>	
<b>50-&gt;100</b>	7	5	5.5	7	<b>6</b>	
<b>100-&gt;150</b>	10.25	7	7.5	9	<b>8.3</b>	
<b>150-&gt;200</b>	10.25	8	8.5	10	<b>9</b>	
<b>Total</b>	26.7	19.6	21.4	26.1	<b>23.4</b>	

<b>100y Rimfire KD Ammunition Come-Ups (in MOA), Sight Height 1.9"</b>						
Distance	Eley Target 40g	Blazer 40g HV	Federal Automatch	CCI Standard Velocity	Average	My Come Ups
<b>25</b>	0	0	0	0	<b>0</b>	
<b>25-&gt;50</b>	0.4	0.6	0.3	0.4	<b>0.4</b>	
<b>50-&gt;75</b>	3.1	1.0	1.6	3.1	<b>2.2</b>	
<b>75-&gt;100</b>	3.9	2.8	3.1	4.3	<b>3.5</b>	
<b>Total</b>	7.4	4.4	5.1	7.4	<b>6.1</b>	

\* Data source: Strelak Pro

### *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: Target size (inches) / Target size (MOA) = Range (in 100s yards)

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

### *Reading and Adjusting for Wind*

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

How to correct for wind with a .22 rimfire rifle:

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.

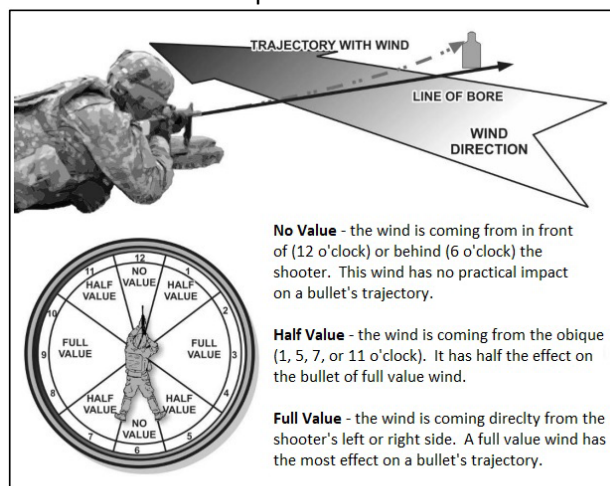
Example: Object drops at 40-degree angle, divided by 4 is 10, so wind velocity is approximately 10 mph.

- 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 (Wind Value) 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:

- $\text{Correction in MOA} = \text{Wind Value} \times 50\text{s of yards} \times 5\text{s of mph of wind}$

### 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