Hitches And Towing

Towing a travel trailer:
Before towing a travel trailer the most important question to answer is:

"Will my tow vehicle safely tow this trailer?"

This is the first and most important rule of towing. 
"What do we need to be correct and safe?"
First and foremost, you must know the weight of the trailer. In other words the GVWR (Gross Vehicle Weight Rating).

example: (4850 lbs trailer + 750lbs tongue weight + 500lbs cargo capacity = 6100lbs)

Your towing capacity must be greater than this. Most standard 1/2 ton pickup trucks have a towing capacity of 5000lbs. However, you can increase that capacity by using a weight distribution kit. Your owner's manual should tell you the highest you can go. Others factors such as truck axle ratios and engine size will also determine your vehicle's towing ability.

Note: Dry or empty weight may not include things such as awnings or LP bottles. Build in a little overage to be on the safe side. New government rules allow trailer manufacturers not to completely disclose the dry weight of the trailer

GVW: Gross Vehicle Weight Includes:
- Curb Weight
- Cargo Weight
- Persons weight

Gross vehicle weight (GVW) is the actual weight of the fully loaded vehicle or trailer, including all cargo, fluids, passengers and optional equipment, as measured by a scale.

If you are in a motor home and not towing anything, the GVW is the total weight of the RV and everything in it. If your RV is composed of more than one unit (towing a trailer or a vehicle), then the GVW is only part of the total.
The GVW is important because without this number you can not determine if you are within the limits set forth by the manufacturer, laws and regulations. This number can be approximated based on information provided by the manufacturer or dealer, but the only way to be sure is to drive the RV on a scale and measure it.

**GVWR: Gross Vehicle Weight Rating:**
Gross Vehicle Weight Rating (GVWR) is the maximum number that the GVW or GTW should ever exceed. GVWR is applied to trailers as well as all vehicles, but you may see this rating referred to as the Maximum Loaded Trailer Weight.

**GTW: Gross Trailer Weight**
GTW includes:
- All GAW's
- Tongue weight or King Pin Weight
- Weight on all deployed jacks
Gross Trailer Weight (GTW) is the same as Gross Vehicle Weight (GVW) when referring to a trailer. While GVW can be applied to tow vehicles and trailers, GTW makes it clear that we are speaking of a trailer.

When connected, a portion of the trailer's weight is transferred to the tow vehicle through the hitch. In this case the GTW includes all axle GAW's and the Tongue Weight or King Pin Weight. When not connected to the tow vehicle, the trailer's weight rest on its own tires and on all deployed stabilizing jacks. If you are weighing a trailer without the tow vehicle, be sure to place the entire unit on the scale, including all jacks.

**GCW: Gross Combination Weight**
GCW includes:
- GVW of tow vehicle
- GVW of towed vehicle
Gross Combination Weight (GCW) is the actual weight of the fully loaded tow vehicle plus the towed vehicle (trailer, car, boat etc.), including all cargo, fluids, passengers, and optional equipment. If your RV is composed of more than one unit (towing trailer or a vehicle), then the GCW is the total weight of all connected vehicles and everything in them.
Again, the only way to accurately determine the GCW is to drive the entire assembly onto a scale. You may also determine the GCW by adding up the individual GVW's of all components.

*If you weigh the components separately, make sure that they are configured and loaded exactly as you will be when traveling.*

**GCWR: Gross Combination Weight Rating**
Gross Combination Weight Rating (GCWR) is the maximum number that the tow vehicle GVW plus towed vehicle GVW (or GTW) should ever exceed.

**GAW: Gross Axle Weight**
Gross Axle Weight (GAW) is the actual weight placed on a single axle. Assuming a well balanced vehicle, the GAW is then evenly distributed to all tires on that axle. In addition to the axle weight rating, the GAW must be within the tire weight ratings as well. To determine the amount of weight placed on each tire, divide the GAW by the number of tires on the axle. You may see the more specific RGAW, when referring to the rear axle, or FGAW, when referring to the front axle.

**GAWR: Gross Axle Weight Rating**
Gross Axle Weight Rating (GAWR) is the maximum number that the GAW of a single axle should ever exceed. Again, you may see the more specific RGAW, when referring to the rear axle, or FGAW, when referring to the front axle.

**Tongue Weight or King Pin Weight**
Tongue Weight (also called Tongue Load) is the actual weight pressing down on the hitch ball by the trailer. The recommended amount of King Pin Weight (also called Pin Weight) is the actual weight pressing down on the fifth wheel hitch by the trailer. The recommended amount of King Pin Weight is 15-25% of the GTW. These weights are added to the tow vehicle's GVW.

**Curb Weight**
Curb Weight Includes:
- vehicle weight with standard equipment only
- full fuel tank
- full fresh water tank(s) weight
- full propane container weight
• Equipments fluids full

Curb Weight is the actual weight of a vehicle or trailer including all standard equipment, full fuel tanks, full fresh water tanks, full propane bottles, and all other equipment fluids, but before taking on any persons or personal cargo.

We have seen the following variations to this definition:
• includes driver
• includes optional equipment

Pay close attention to how the manufacturer defines Curb Weight because this is often used to calculate other weights, such as the cargo carrying capacity or Payload.

**Dry Weight**

Dry Weight is the actual weight of a vehicle or trailer containing standard equipment without fuel, fluids, cargo, passengers, or optional equipment.

We have seen the following variations to this definition:
• includes commonly ordered optional equipment
• includes fluids of generator and other onboard equipment (oil, coolant and fuel)
• May or may not include RV batteries

Pay close attention to how the manufacturer defines Dry Weight because often this is used to calculate other weights, such as the cargo or Payload.

**UVW: Unloaded Vehicle Weight**

UVW Includes:
• vehicle weight as manufactured at the factory
• full fuel tank weight
• equipment fluids weight

Unloaded Vehicle Weight (UVW) is the weight of a vehicle as manufactured at the factory. It includes full engine and generator fuel tanks and fluids, if applicable. It does not include cargo, water, propane or dealer installed accessories.

Beware that some manufactures weigh each unit to determine UVW, while others provide only the average or estimated weight for each model.
We have seen the following variations to this definition:
- includes actual factory installed options
- includes commonly ordered factory installed options

Pay close attention to how the manufacturer defines UVW because this often is used to calculate other weights, such as cargo carrying capacity or Payload.

**Cargo Weight**
Cargo Weight includes:
- personal cargo weight
- optional equipment weight
- tongue weight or king pin weight

Cargo Weight is the actual weight of all items added to the Curb Weight of a vehicle or trailer. This includes personal cargo, optional equipment, and the Tongue Weight or King Pin Weight. This number is important because it will determine how many things you can safely pack in your RV. Within this number you need to fit the weight of your clothes, shoes, linens, books, dishes, beer, cleaning supplies, computer equipment, hiking gear, bicycles, water sport implements, food--basically everything you want to take with you.

**TOWING EQUIPMENT. WHAT YOU NEED TO KNOW**

Once you are straight on you vehicle and trailer weights it is time to select the equipment you need to tow with.

**WEIGHT DISTRIBUTION HITCHES.**
The traditional weight distribution hitch kit consists of:
(1) Hitch head (1)Hitch ball (2) Weight bars
(2) Chains (2) Snap up brackets
Sway Control

Sway controls will keep your trail from the back and forth motion when towing.

The purpose of the weight distributing hitch is to distribute the tongue weight of the trailer from the coupler to the front axles of the tow vehicle and the trailer axles.

Note: Do NOT back up or drive in hard rain or icy conditions with a sway control.
Various hitches with built in sway control:

- Equal-i-zer Sway Control Hitch
- Blue Ox Sway Pro
- Reese Straight Line

These hitches have the sway control as part of their design:

- Hensley
Towing a Fifth Wheel Trailer is one of the easiest ways to tow. The weight of the trailer tongue is placed directly over the truck axles making maneuvering simple. The ride is much easier when the proper hitch is used.
Standard 5th Wheel Hitch for 8' Bed:

Reese

Sliding 5th Wheel Hitches for 6' bed:

Reese

Pullrite
Only one manufacturer makes a hitch for a 5 1/2' bed. Pullrite Gooseneck hitches and adapters:
BRAKE CONTROLLERS
Brake controllers come in all shapes and sizes.

Starting at the top:

Hayes G2

The easy-to-use manual emergency braking control lets you apply full power in emergency stopping situations. The three-axis accelerometer technology automatically levels and senses the rate of deceleration.

Prodigy Brake Controller

Prodigy is the latest and most intelligent brake control from Tekonsha. This powerful control features new motion sensor technology similar to what’s used in the aero-space industry.
COMPARISON BETWEEN PROPORTIONAL AND TIME-DELAY CONTROLLERS

*Time Delayed Brake Controller*
With the Time Delayed trailer brake controllers, once the brake pedal is stepped on, the pre determined amount of power (which is set by the user, based on trailer weight) is sent back to the trailer brakes. On time delayed controllers, a delay always exists when the brake pedal is pushed to when the unit reaches the user set, maximum power output. The delay can be shortened or lengthened with the 'sync' switch, available on most time delayed controllers, but it behaves the same way for every stop (slow or fast). If the sync switch is set too high, the trailer will be braking harder. So in most cases, either the truck or trailer will be doing most of the braking, resulting in uneven brake wear.

*Energize III all electronic brake controller*
features a patented sensing device that automatically monitors and measures tow vehicle deceleration and applies the trailer brakes in direct proportion.
With Proportional brake controllers, once the brake pedal is stepped on, a motion sensing device knows how fast the tow vehicle is stopping. It then applies power to the trailer brakes equally as fast (or slow) as the towing vehicle. This allows the trailer to stop at the same rate as the tow vehicle. Therefore, in an extreme stopping situation where the vehicle's brakes are slammed on, a proportional controller will immediately send the maximum preset power to the trailer brakes.

When the hub/drum assembly is installed onto the spindle the inner surface of the drum is a fraction of an inch away from the friction surface of the shoes, and the magnet is very close to the front inside of the drum. Electric current from the brake controller energizes this magnet which in turn tries to attach itself to the spinning brake drum. The rotating motion of the drum causes the actuating arm to pivot, spreading the brake shoes, causing them to come in contact with the brake drum and apply the brakes. Most states require that trailers using electric brakes be equipped with a safety circuit, called a breakaway system, designed to apply the brakes should the trailer become disconnected from the tow vehicle. This system consists of a battery mounted on the trailer and a normally closed switch. The contacts of the switch are separated by a piece of non-conductive plastic to which a lanyard is attached. The other end of the lanyard is
attached to the tow vehicle. Should the trailer become detached from the tow vehicle the lanyard is pulled, closing the switch, applying current from the on board battery to the brakes, stopping the trailer.

Never Use The Brake Away To Chock Your Wheels!!

TOWING A CAR BEHIND YOUR MOTORHOME

Towing a car behind a motor home has become very popular. Along with the comforts of home on the road, you can have the family car as well.

How do we do this?
First your car has to be towable four wheels on the ground. Most standard (stick) transmissions are towable and most 4 wheel drive vehicles are too. Some automatic transmissions are also towable. In some cases certain cars that are NOT towable can be towed with the addition of a transmission lube pump.
Check your owner's manual to know for sure.

The Components for Towing:
TOW BAR

WIRING KIT

BRAKING SYSTEM
Braking systems are important because they allow the towing vehicle help stopping the motor home. Many states are now requiring them. Canada mandates them. Even though you may not feel it, a towed vehicle without brakes can push the motor home as much as 200 feet further in a braking situation. Tow bars do not like to be pushed either. The weight of the towed vehicle pushing on the tow bar can damage it.

If you do not have a car that is towable 4 wheels on the ground then plan B is a tow dolly.

Good Tow Dollies have hydraulic surge brakes and a folding front bar.

**Backing Up**
Put your hand at the bottom of the steering wheel.
To turn left, move your hand left.
To turn right, move your hand right.

*Back Up Slowly.*