1. Mark the blue engine mount tube at 1/2" (13 mm), 1" (25 cm), 2-1/2" (6.4 cm) and 2-5/8" (6.7 cm).

2. Insert the engine hook in the nose cone as shown.

3. Use a hobby knife to carefully cut fins out of balsa sheets. (Always cut away from other fins to avoid damage.) Be sure cuts go all the way through the balsa, then remove fins.

4. Lay sandpaper, rough side up, on table. Stack fins together and lightly sand the edges smooth and flat. DO NOT SAND AWAY TABS ON ROOT EDGES.

5. Cut out shock cord mount below along solid lines. Crease on dotted lines.

A. Inserting the hook in the nose cone as shown.

B. Use a hobby knife to make a 1/8" (3 mm) wide slit at the 2-1/2" (6.4 cm) mark only.

C. Applying glue to slit.

D. Glue the shock cord (3.8 cm) down into slots of the body into place.

E. Slit the top 1/2" (13 mm) of the engine hook.

F. Slit the top 2-5/8" (6.7 cm) of the engine hook.
3. Fold forward again. Spread glue on section 2 and lay shock cord into glue at a slight angle as shown. Fold section 1 forward.

4. Lightly draw a straight line down the length of the body tube between any two fin slots. This is your launch lug line.

**NOTE:** A door frame can be used to do this, but we recommend the Estes Rocket Builder's Marking Guide (EST 302227)

5. Using your wood stick, apply glue inside the body tube at the top of the slots as shown.

6. Slide the engine mount into the body tube until their ends are even. BE SURE TO ALIGN THE ENGINE HOOK WITH THE LAUNCH LUG LINE.

7. Reinforce the joint between the body tube and rear centering ring by applying a layer of glue (fillet) around it.

**NOTE:** You may need to sand fin tabs to fit properly.

A. Test fit fins into slots. Apply glue to the tabs on the fins and along the root edges as shown. Insert the fins into slots, checking alignment to make sure fins are straight.
8. A. Mark the launch lug line at 2" (5.1 cm) from the REAR of the body tube.
   B. Apply glue to the launch lug and apply lug to mark. BE SURE LUG IS PERFECTLY ALIGNED before glue sets.
   C. After glue is dry, apply a glue reinforcement (filler) to both sides of the launch lug and fins. Smooth with finger.

9. A. Clean any excess plastic from nose cone. Be sure not to cut off nose cone eyelite.
   B. Form loop with parachute shroud lines.
   C. Push loop through nose cone eyelite.
   D. Pull tight.
   E. Pull tight.

10. PACKING PARACHUTE
    A. Spike.
    B. Fold.
    C. Roll.

Parachute should slide easily into body tube. If fit is too tight, unfold and repack again.

11. FINISHING YOUR ROCKET
    A. Use automotive primer to smooth and fill balsa fins and body tube. If necessary, sand with 400 grit sandpaper and reapply primer until a smooth finish is achieved.
    B. Mask off the nose cone, then paint the rocket body red. Let dry completely.
    C. Once dry, mask off the rocket body and paint the nose cone black.

12. FLYING YOUR ROCKET

ROCKET PREPARATION
Remove nose cone, shock cord and parachute.
Crumple and insert four squares of recovery wadding. Repack and insert parachute, shock cord and nose cone.

ENGINE PREPARATION
A. Separate igniter and igniter plug.
B. Hold engine upright, drop in igniter. Igniter must touch propellant.
C. Insert igniter plug.
D. Firmly push all the way in.
E. Bend igniter wires back.
LAUNCH SUPPLIES
To launch your rocket, you will need the following:
- Launch Pad (Estes Porta-Pad II)
- Launch Controller (Estes Electron Beam®)
- Recommended Estes Engines: A8-3, B4-4, B6-4, C6-5. Use an A8-3 engine for your first flight to become familiar with your rocket.
- Recovery Wadding (EST 302274)
- Igniters and Igniter Plugs (included with Estes engines)
Use only Estes products to launch this rocket.

<table>
<thead>
<tr>
<th>ENGINE</th>
<th>PROJECTED ALTITUDE</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Feet</td>
</tr>
<tr>
<td>A8-3</td>
<td>161</td>
</tr>
<tr>
<td>B4-4</td>
<td>357</td>
</tr>
<tr>
<td>B6-4</td>
<td>372</td>
</tr>
<tr>
<td>C6-5</td>
<td>700</td>
</tr>
</tbody>
</table>

TIPS FOR FLYING YOUR ROCKET
- Choose a large field away from power lines, buildings, tall trees, and low flying aircraft. Try to find a field at least 250 feet (76 meters) square. The larger the launch area, the better your chances of recovering your rocket.
- Launch area must be free of dry weeds and brown grass.
- Launch only during calm weather with little or no wind and good visibility.
- Don’t leave parachute packed more than a minute or so before launch during cold weather (colder than 40° Fahrenheit [4° Celsius]). Parachute may be dusted with talcum or baby powder to avoid sticking.
- Always follow the National Association of Rocketry (NAR) MODEL ROCKETRY SAFETY CODE while participating in any model rocketry activities. The safety code is enclosed with this kit.
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COUNTDOWN AND LAUNCH
10... Safety key must not be in launch controller. The safety cap with safety key attached should already be on the launch rod.

9... Remove safety cap from launch rod. Elide launch lug over rod. Make sure rocket slides freely and micro-clips are clean for good electrical contact.

8... Attach micro-clips to the igniter wires. Arrange the micro-clips so they do not touch each other or the metal blast deflector. Attach micro-clips as close to protective tape on igniter as possible.

7... Move everyone back from your rocket as far as launch-wire will permit (at least 15 feet - 5 meters).

6... Insert safety key to arm the launch controller.

5... Start audible countdown.

4...3...2...1......

LAUNCH!
Push and hold button until engine ignites. For safety, immediately remove safety key from launch controller and replace safety cap on launch rod.

MISFIRES
When an ignition failure occurs, remove the safety key from the launch control system and wait one minute before approaching the rocket. Remove the expanded igniter from the engine and install a new one. Be certain the coated tip is in direct contact with the engine propellant. Broken or chipped coating will not affect the performance of the igniter. Reinstall the igniter plug as illustrated previously. Repeat the countdown and launch procedure.