



ANSWER KEY: Solid Rocket Boosters

Directions

Complete the following activities using the solid rocket booster information sheet.

Your Mission:

Your launch team needs the missing information to complete the launch. Find the key terms or numbers and accurately fill in each blank.

- Each booster rocket is attached to either side of the **external tank** (ET) and is **149.16** feet (**45.46** meters) tall with a diameter of **12.17** feet (**3.7** meters). Each SRB weighs approximately **1,300,000** pounds (**589,670** kilograms) at launch with roughly **85** percent being the weight of the **solid fuel** itself.
- The solid rocket boosters (**SRB**) operate in parallel with the **main engines** for the first **two** minutes of flight to provide the additional thrust needed for the orbiter to escape the **gravitational** pull of the Earth. At an altitude of approximately **45** km (**24** nautical miles), the boosters separate from the **orbiter/external** tank, descend on parachutes, and land in the **Atlantic** Ocean.
- In addition to the solid rocket **motor**, the booster contains the structural, **thrust vector control**, separation, recovery, and **electrical** and **instrumentation** subsystems.
- The two SRBs provide **71.4** percent of the main **thrust** needed to lift the Space Shuttle off the launch pad. Each booster has a thrust of approximately **3,300,000** pounds (**14,685** kilonewtons) at launch and help lift the Shuttle up to an altitude of about **150,000** feet, or **28** miles (**50** kilometers).
- The solid fuel, or **propellant**, is a mixture of **ammonium perchlorate**, **aluminum**, and **iron oxide**.

Your Mission:

Write these statistics in scientific notation. Don't forget to label your units. The first one is done for you.

Booster Statistic	Write the number without the place-holding zeros	Place the decimal point after the first digit	Count the number of places you moved the decimal point	Write the number in scientific notation
Thrust at lift-off 1,202,000 kg	1202	1.202	1.202000	1.202×10^6 kg
Propellant Weight 502,000 kg	502	5.02	5.02000	5.02×10^5 kg
Gross weight 589,700 kg	5897	5.897	5.89700	5.897×10^5 kg
Gross weight 1,300,000 lb	13	1.3	1.300000	1.3×10^6 lb
Thrust of both boosters 5,300,000 lb	53	5.3	5.300000	5.3×10^6 lb

Your Mission:

Label the orbiter parts below.

