"We are on our way to the stars. We have been for a very long time."

Astronaut John Young, Commander
Space Shuttle Orbiter Columbia

In remembrance of

Sharon Christa McAuliffe
THE AMERICAN SPACECRAFT THAT CARRIES ASTRONAUTS AND SATELLITES INTO ORBIT IS THE SPACE SHUTTLE.

THE SPACE SHUTTLE IS MADE UP OF THREE PARTS:
- ORBITER
- EXTERNAL TANK
- TWO SOLID ROCKET BOOSTERS

THE ORBITER AND TWO SOLID ROCKET BOOSTERS ARE REUSABLE.
## SEEK A WORD

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| ROCKETS | HEAT | CARGO | SHIELD | MOTOR | BAY | ORBITER | SOLID | TANKS | SPACE | FUEL | SHUTTLE |

Answers on page 20
THE ORBITER IS LIKE A CARGO PLANE. IT HAULS CARGO TO AND FROM SPACE.

THE ASTRONAUTS RIDE AND LIVE IN THE ORBITER.
WORD FUN

Follow the signs (minus or plus) between the words to find the answers.

1. Shuttle astronauts will live in the ___________ ___________.
car – ar + drew – d/tonic – toni + art – rt + bingo – go

2. These help keep the Shuttle on course. ___________ ___________
Steam – am + eye – ye + bring – b/rocker – cker + tickets – ti

3. Satellites can be stored behind these. ___________ ___________
Candy – ndy + charge – cha + ego – eeg/doubt – ubt + floors – flo

4. These make the Shuttle accelerate. ____ _____ _____
Many – ny + pain – pa/rope – pe + back – ba + net – n/early
- arly + sing – si + fine – f + this – thi.

5. These are useful when traveling through the air. ___________
Water – ter + satin – asat + gnaw – naw + lass – las

ANSWERS ON PAGE 20
THE EXTERNAL TANK CARRIES LIQUID FUEL AND OXYGEN FOR THE ORBITER’S MAIN ROCKET ENGINES.

THE SOLID ROCKET BOOSTERS ARE USED TO HELP LAUNCH THE ORBITER.
PARTS AND RIDDLES

Look at the Orbiter parts in the picture and solve these riddles.

1. I am part of the air you breathe; I am ______________________.

2. I am not hollow; I am ______________________________.

3. I am a popular fireworks item; I am a sky ________________.

4. I look somewhat like a very large umbrella; I am a ________.

5. Sometimes I contain gasoline or diesel fuel; I am a ________
   ____________________.

ANSWERS ON PAGE 20
THE CARGO BAY CAN CARRY ONE OR MORE SATELLITES INTO SPACE OR BACK TO EARTH.

THE CARGO BAY IS 15 FEET IN DIAMETER AND 60 FEET LONG.
SOLVE THE PROBLEMS TO FIND ONE OF THE ORBITER'S MISSIONS.

\[ H = 6 \times 3 \quad A = 24 \div 3 \quad G = 7 + 6 \]
\[ R = 24 - 12 \quad L = 7 \times 5 \quad O = 5 + 9 \]
\[ N = 2 \times 3 \quad C = 18 \div 6 \quad U = 4 \times 4 \]
\[ I = 13 - 6 \]

\[
\begin{array}{cccccc}
 3 & 8 & 12 & 13 & 14 \\
 18 & 8 & 16 & 35 & 7 & 6 & 13 \\
\end{array}
\]

ANSWER ON PAGE 20
A TYPICAL SHUTTLE MISSION

1 LAUNCH

THE SPACE SHUTTLE IS LAUNCHED FROM LAUNCH PADS AT KENNEDY SPACE CENTER AND VANDENBERG AIR FORCE BASE.

2 D BOOSTER SEPARATION

THE SOLID ROCKET BOOSTERS ARE DROPPED AT AN ALTITUDE OF ABOUT 27 MILES, THEY ARE PARACHUTED INTO THE OCEAN AND RECOVERED.

3 EXTERNAL TANK SEPARATION

THE EXTERNAL TANK IS SEPARATED AT AN ALTITUDE OF ABOUT 75 MILES. IT IS NOT RECOVERED.

4 IN ORBIT

SHUTTLE MISSIONS NORMALLY LAST FROM 4 TO 10 DAYS.

5 REENTRY

THE ENTIRE ORBITER IS COVERED WITH A HEAT SHIELD.

6 LANDING

AFTER REENTRY THE ORBITER IS FLOWN LIKE A GLIDER AND LANDED ON A RUNWAY LIKE AN AIRLINER.
PARTS JUMBLE
FIT THE ORBITER’S PARTS INTO THE PUZZLE.

WING — RUDDER — ENGINE — BOOSTER — NOZZLE — CARGO BAY — GEAR — ROCKET — PARACHUTE — TANK

ANSWERS ON PAGE 20
AFTER THE ORBITER LANDS, IT IS RENEWED AND RETURNED TO FLYING CONDITION.

EACH ORBITER MAY BE USED FOR UP TO 100 FLIGHTS.
FUN WITH RHYMES

MATCH THE RHYMING WORDS AND WRITE THE FIRST LETTER OF EACH WORD IN THE SPACES BELOW AND LEARN HOW MUCH TIME WILL BE NEEDED TO RENEW THE ORBITER.

FLOUR  RUBBER
UPPER  SEAR
TRY  EYE
EVER  OUR
DIAL  AISLE
YEAR  NEVER

ANSWER ON PAGE 20
AFTER THE ORBITER IS RENEWED, THE SPACE SHUTTLE WILL BE REASSEMBLED.

AFTER THE SOLID ROCKET BOOSTERS ARE RECOVERED, THEY ARE ALSO RENEWED AND USED AGAIN.
WORD SCRAMBLE

Unscramble the following Orbiter missions.

1. KPCI PU LISETALETs __________ _________ _________
2. VICERSE TELLISSATE ______________ ____________
3. DUCCONT MEPIREXTSNE NI PSECA ________________
   ____________________________________________
4. PLAROXENITO _____________________________
5. VIPORED FINORAMINOT TOBAU HERATS SECOURERS
   __________ __________________________________
   ___________________________________________

ANSWERS ON PAGE 20
THE MAIN MISSIONS OF THE SPACE SHUTTLE ARE TO:

* DELIVER A SATELLITE INTO ORBIT...

* SERVICE A SATELLITE IN ORBIT...

* PICK A SATELLITE UP AND RETURN IT TO EARTH.
Scientists from many foreign countries work together in the
space laboratory on the Space Shuttle.
Follow the signs (minus or plus) between the words and learn the
names of some of these countries.

1. A CHEESE IS NAMED FOR ME. ________________________
   SWIM – M + TEA – EA + ZEST – ST + RUN – UN +
   LANDING – ING

2. I AM FAMOUS FOR MY SHAMROCKS.____________________
   IVY – VY + RELY – Y + CANDY – CY

3. I AM SHAPED LIKE A BOOT. _________________________
   INTO – NO + ALWAYS – WAS

4. I AM FAMOUS FOR MY TULIPS AND WINDMILLS. _____
   HOLY – Y + LADY – DY + FUN – FU + D

5. “BIG BEN” IS IN MY CAPITAL CITY. ___________________
   EVER – VER + NOON – OON + GLADE – DE + NO – O +
   DYE – YE

ANSWERS ON PAGE 20
ORBITERS WILL CARRY BUILDING MATERIALS INTO SPACE.

IN THE FUTURE, ORBITERS WILL TRANSPORT PEOPLE INTO SPACE TO BUILD LARGE SPACE STRUCTURES.

THE WORKERS WILL LIVE IN THE ORBITER WHILE WORKING IN SPACE.
“Man must rise above the earth—to the top of the atmosphere and beyond—for only thus will he fully understand the world in which he lives.”

Socrates, 500 B.C.