

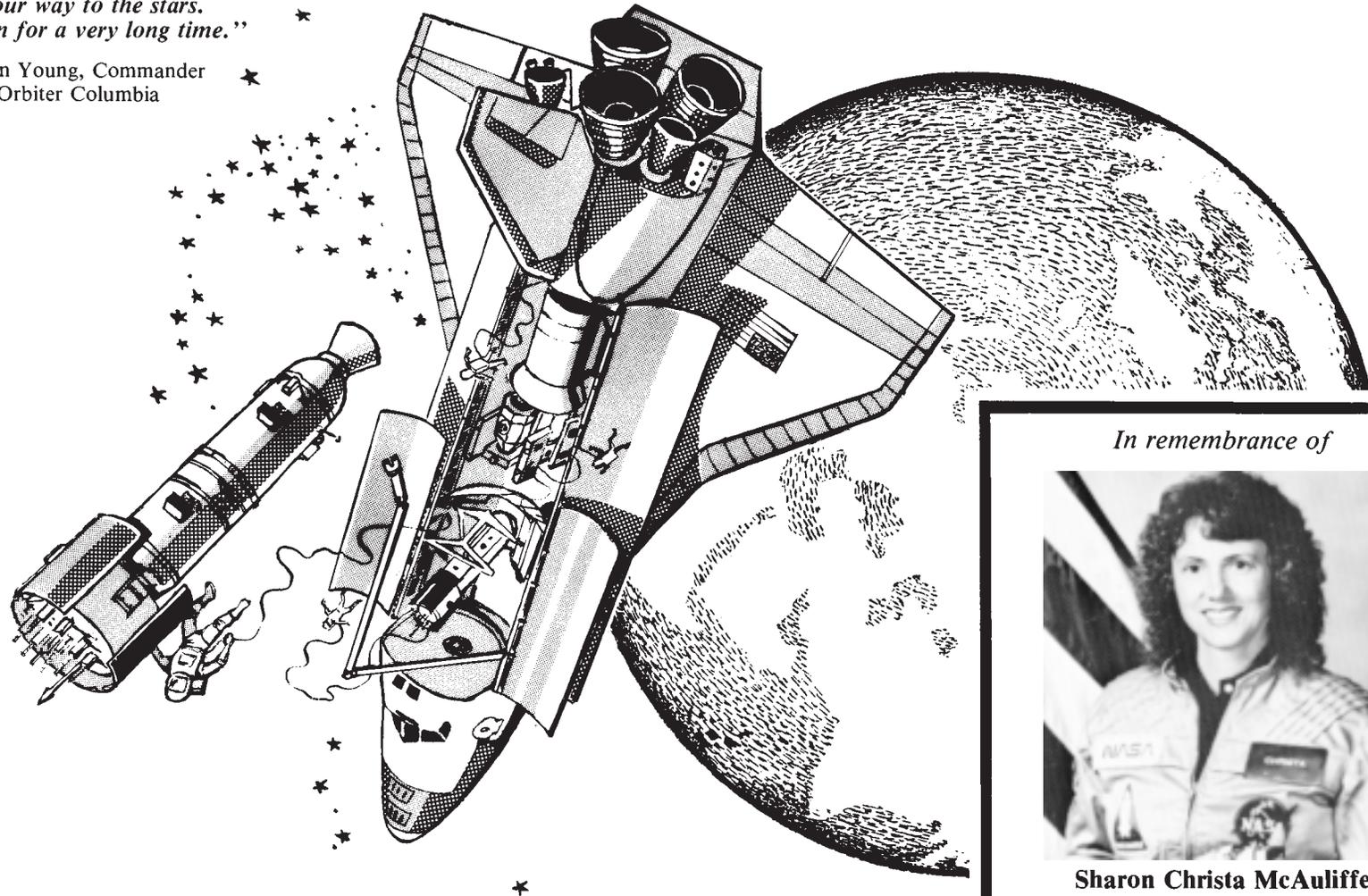
SPACE SHUTTLE

A SPACE TRANSPORTATION SYSTEM

ACTIVITY BOOKLET

*"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



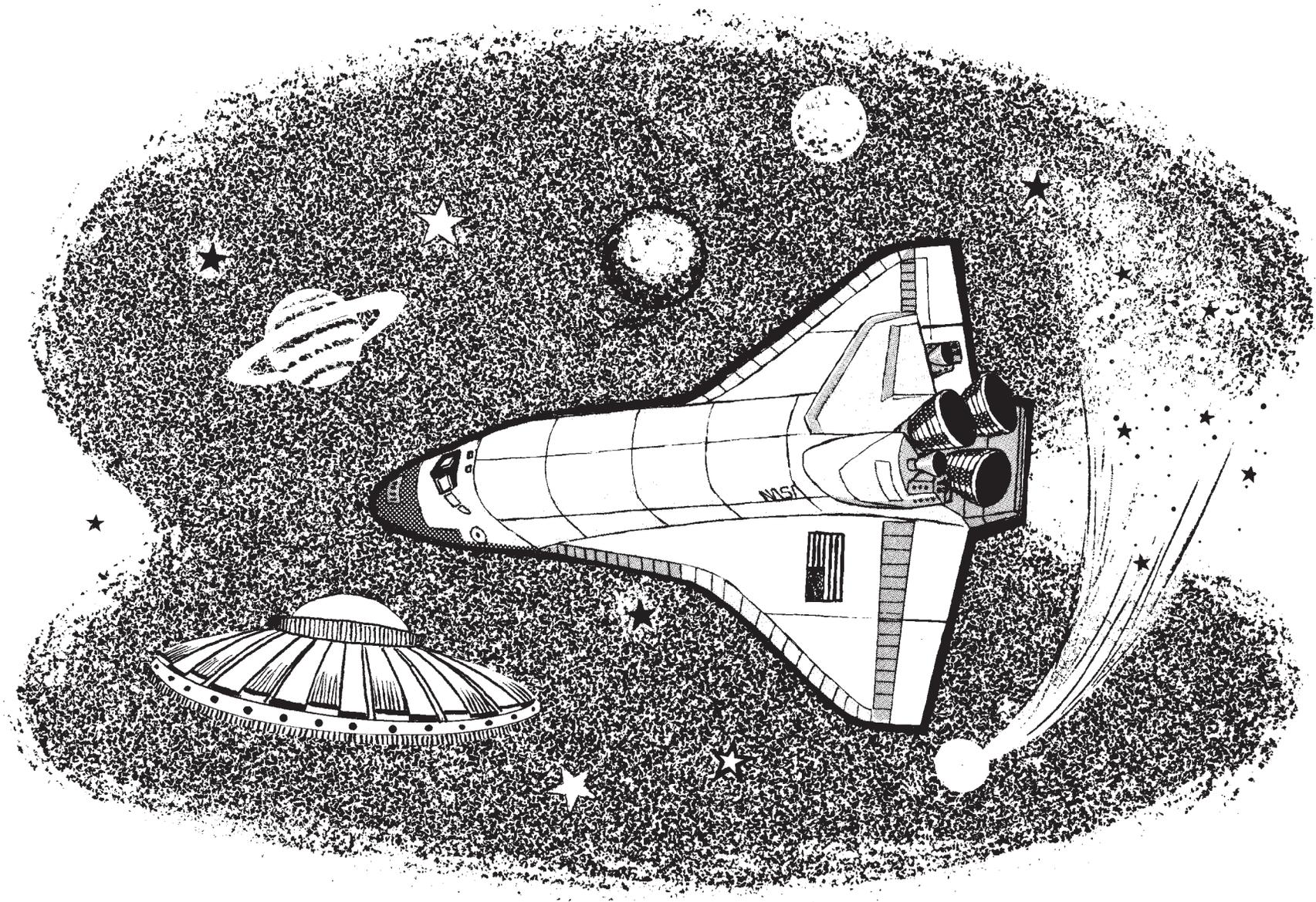
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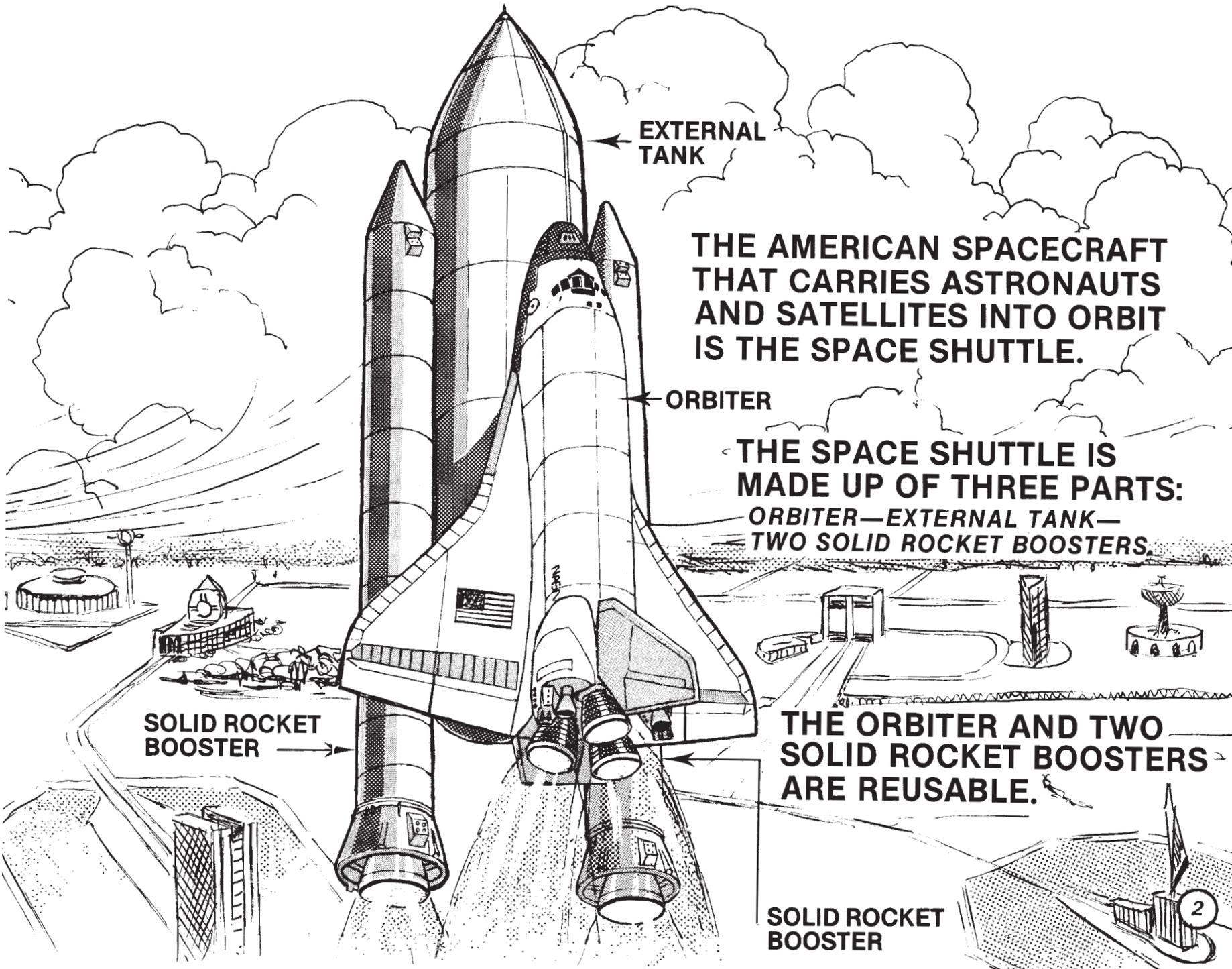
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EXTERNAL TANK

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

ORBITER

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

SOLID ROCKET BOOSTER

THE ORBITER AND TWO SOLID ROCKET BOOSTERS ARE REUSABLE.

SOLID ROCKET BOOSTER

2

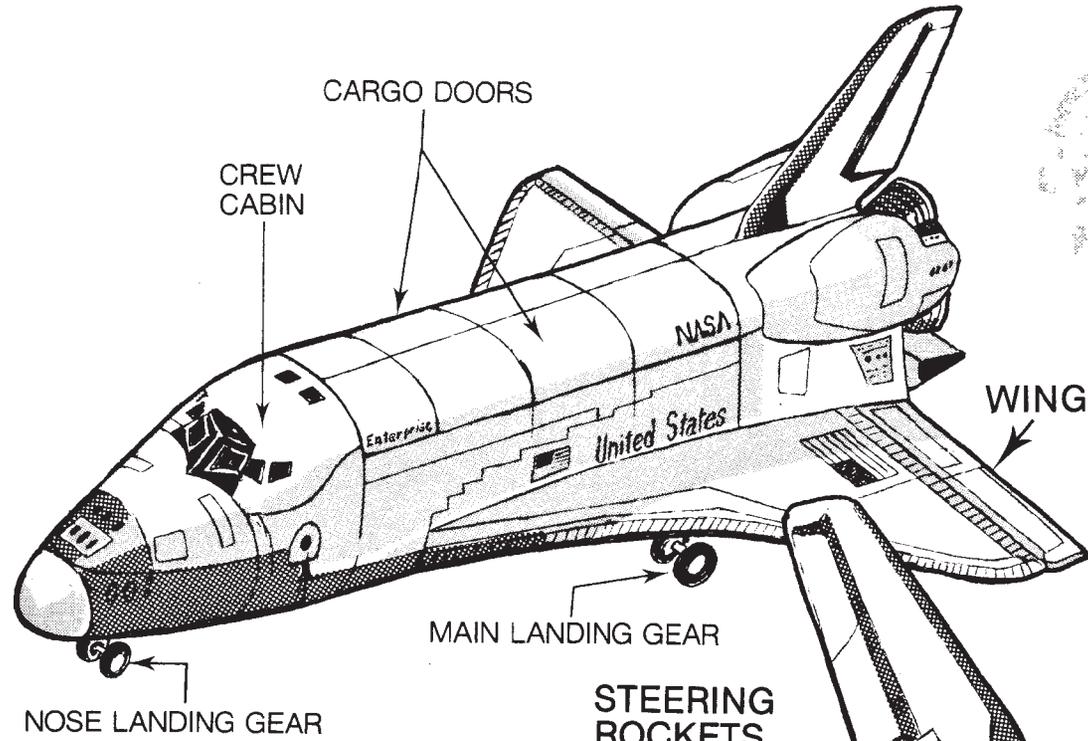
SEEK A WORD

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| B | R | U | F | U | E | L | D |
| A | O | R | B | I | T | E | R |
| Y | C | O | L | H | A | L | G |
| O | K | T | S | E | N | T | D |
| G | E | O | G | A | K | T | I |
| R | T | M | I | T | S | U | L |
| A | S | P | A | C | E | H | O |
| C | D | L | E | I | H | S | S |

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

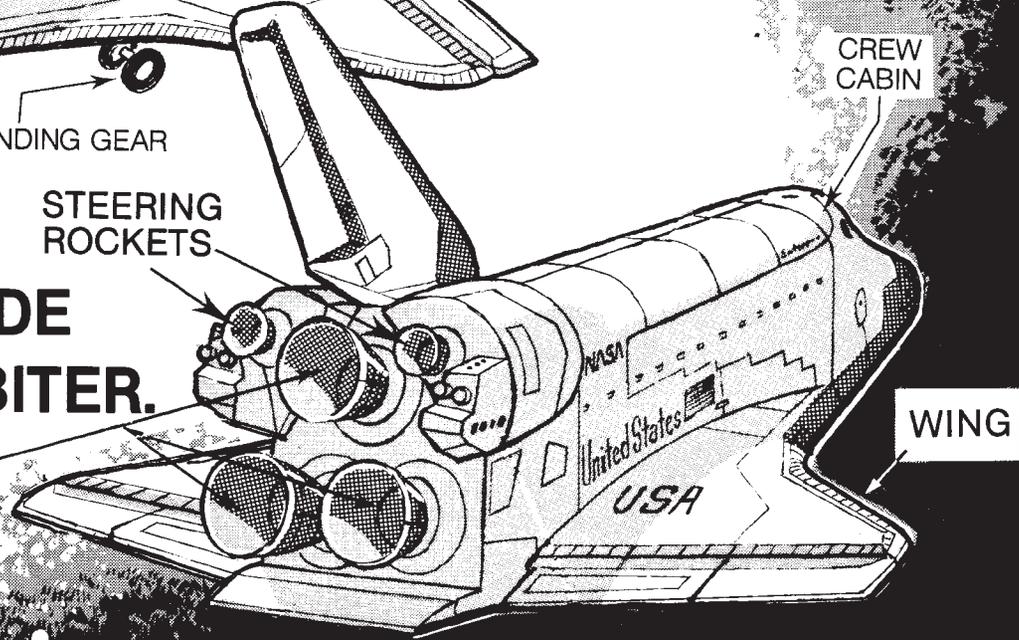
ANSWERS ON PAGE 20

**THE ORBITER IS LIKE A CARGO PLANE.
IT HAULS CARGO TO AND FROM SPACE.**



**THE ASTRONAUTS RIDE
AND LIVE IN THE ORBITER.**

MAIN ROCKET ENGINES



WORD FUN

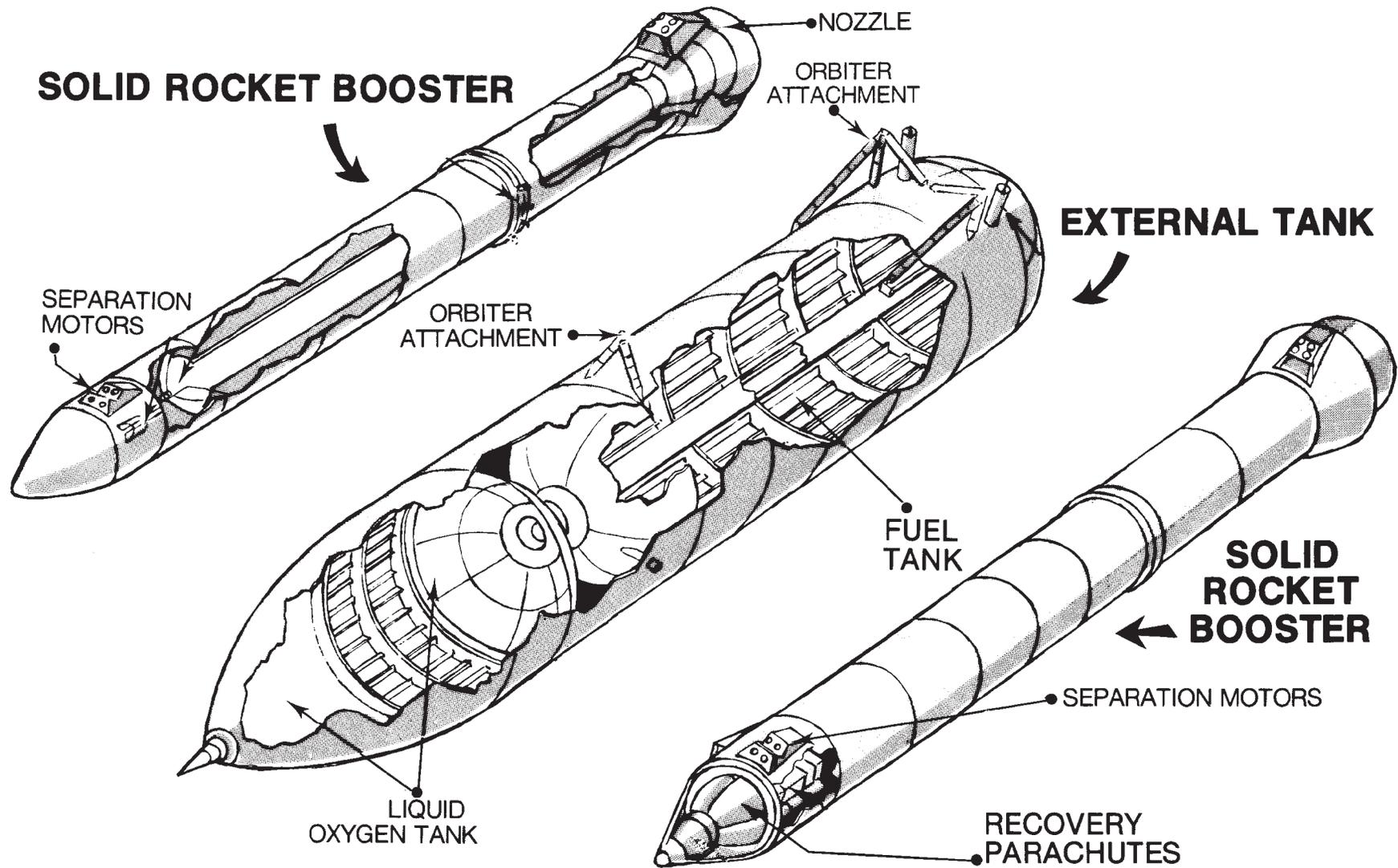
Follow the signs (minus or plus) between the words to find the answers.

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.



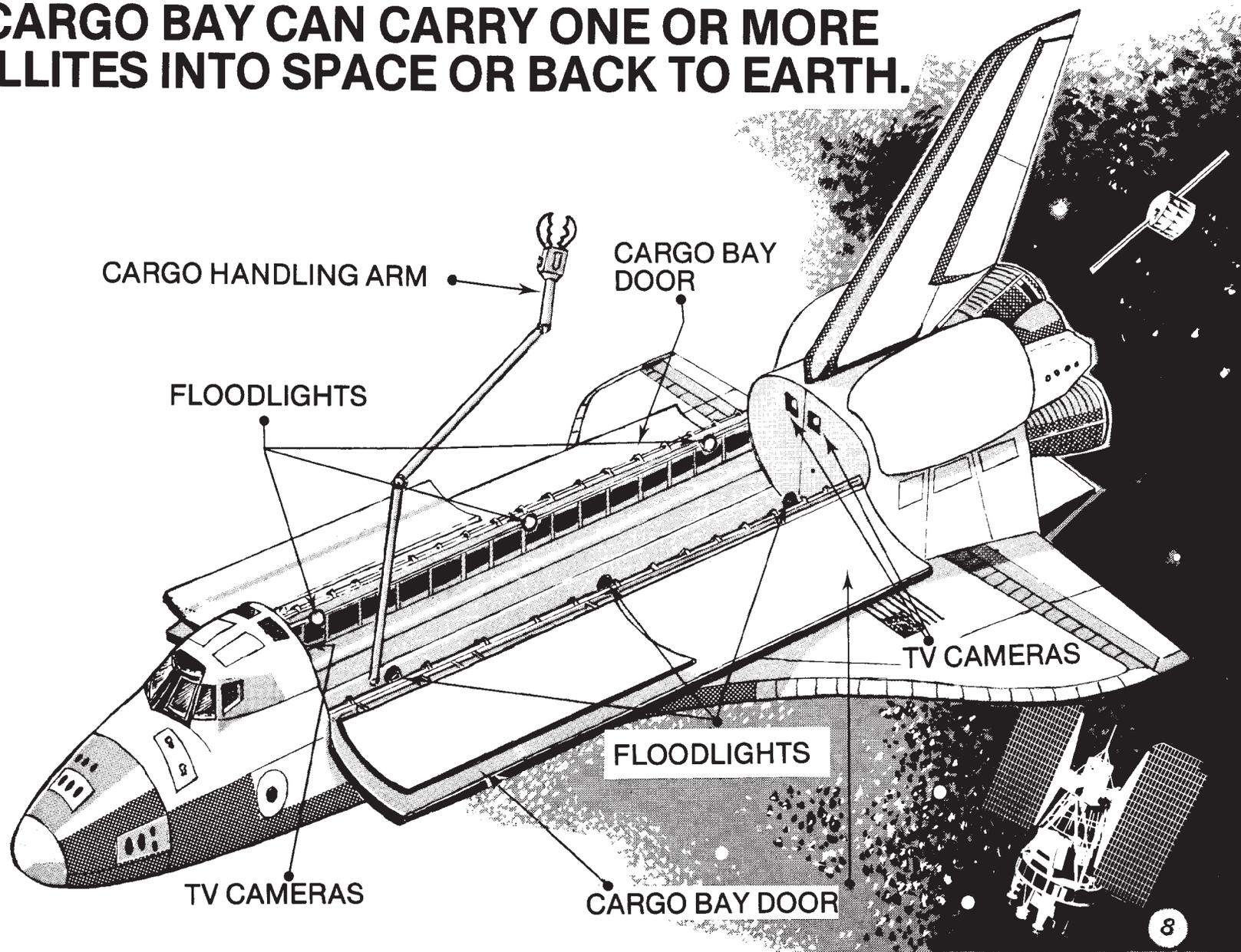
PARTS AND RIDDLES

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.

$$H = 6 \times 3 \quad \underline{\hspace{2cm}} \quad A = 24 \div 3 \quad \underline{\hspace{2cm}} \quad G = 7 + 6 \quad \underline{\hspace{2cm}}$$

$$R = 24 - 12 \quad \underline{\hspace{2cm}} \quad L = 7 \times 5 \quad \underline{\hspace{2cm}} \quad O = 5 + 9 \quad \underline{\hspace{2cm}}$$

$$N = 2 \times 3 \quad \underline{\hspace{2cm}} \quad C = 18 \div 6 \quad \underline{\hspace{2cm}} \quad U = 4 \times 4 \quad \underline{\hspace{2cm}}$$

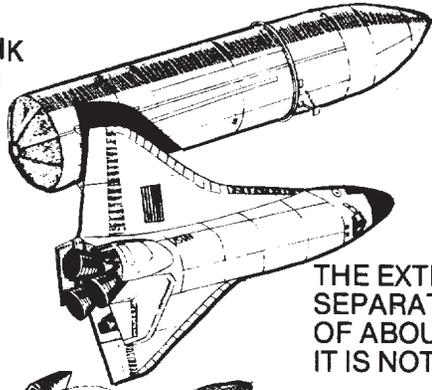
$$I = 13 - 6 \quad \underline{\hspace{2cm}}$$

$$\begin{array}{cccccc} \underline{\hspace{1cm}} & \underline{\hspace{1cm}} & \underline{\hspace{1cm}} & \underline{\hspace{1cm}} & \underline{\hspace{1cm}} & \underline{\hspace{1cm}} \\ 3 & 8 & 12 & 13 & 14 & \\ \\ \underline{\hspace{1cm}} & \underline{\hspace{1cm}} & \underline{\hspace{1cm}} & \underline{\hspace{1cm}} & \underline{\hspace{1cm}} & \underline{\hspace{1cm}} & \underline{\hspace{1cm}} \\ 18 & 8 & 16 & 35 & 7 & 6 & 13 \end{array}$$

ANSWER ON PAGE 20

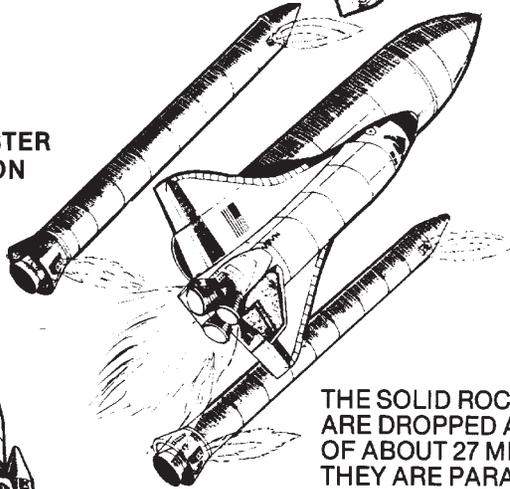
A TYPICAL SHUTTLE MISSION

3
EXTERNAL TANK
SEPARATION

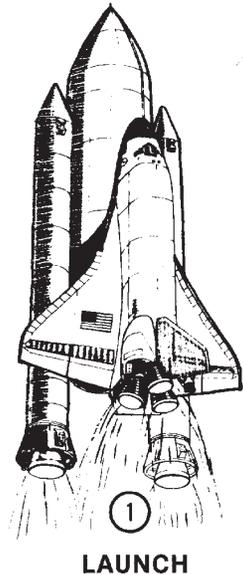


THE EXTERNAL TANK IS SEPARATED AT AN ALTITUDE OF ABOUT 75 MILES. IT IS NOT RECOVERED.

2
D BOOSTER
SEPARATION



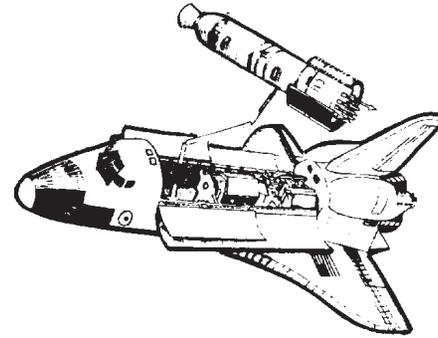
THE SOLID ROCKET BOOSTERS ARE DROPPED AT AN ALTITUDE OF ABOUT 27 MILES. THEY ARE PARACHUTED INTO THE OCEAN AND RECOVERED.



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

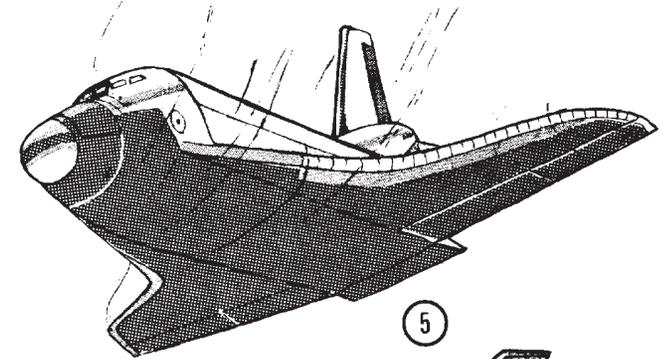
1
LAUNCH

4
IN ORBIT

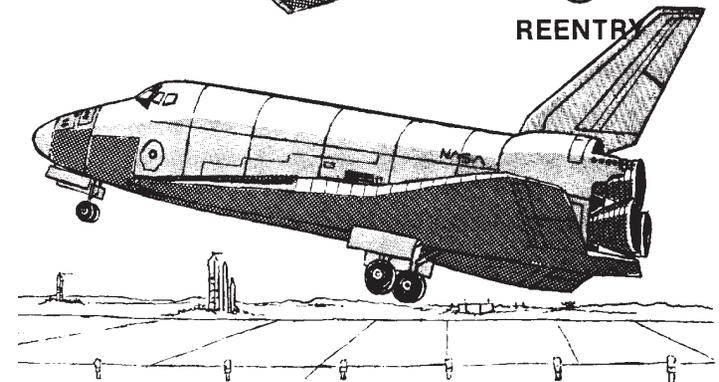


SHUTTLE MISSIONS NORMALLY LAST FROM 4 TO 10 DAYS.

THE ENTIRE ORBITER IS COVERED WITH A HEAT SHIELD.



5
REENTRY

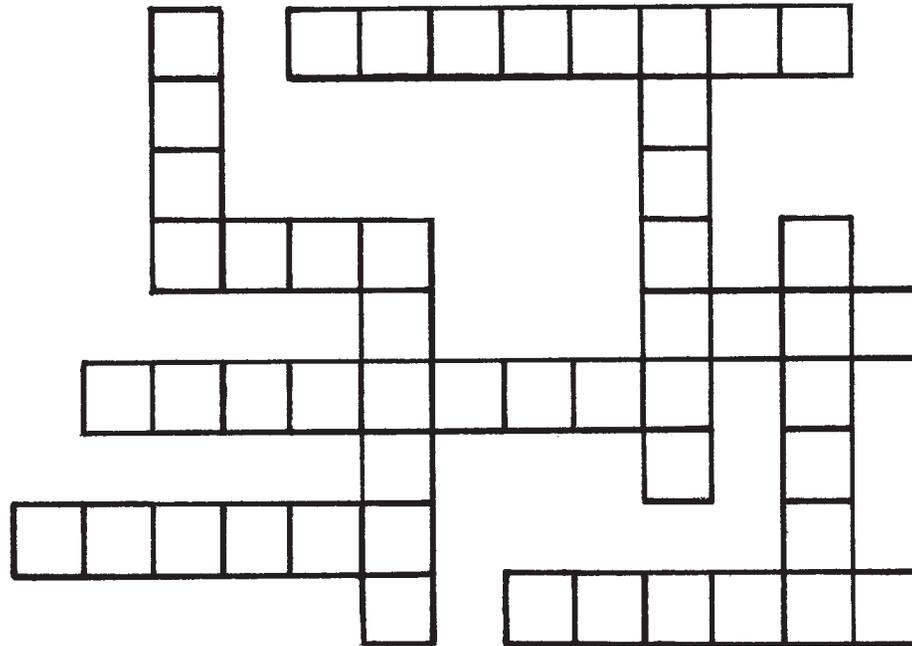


6
LANDING

AFTER REENTRY THE ORBITER IS FLOWN LIKE A GLIDER AND LANDED ON A RUNWAY LIKE AN AIRLINER.

PARTS JUMBLE

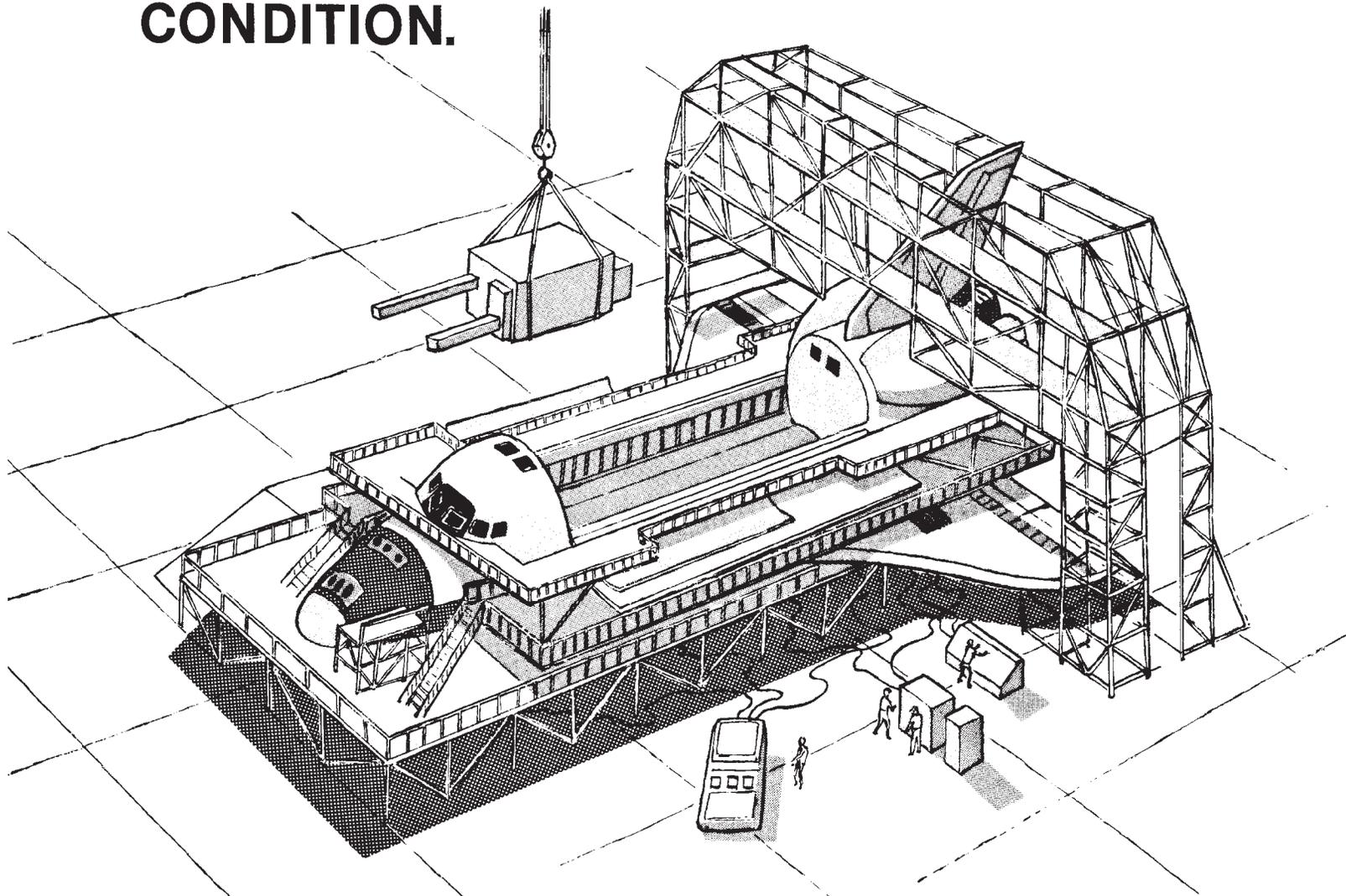
FIT THE ORBITER'S PARTS INTO THE PUZZLE.



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
UPPER
TRY
EVER
DIAL
YEAR

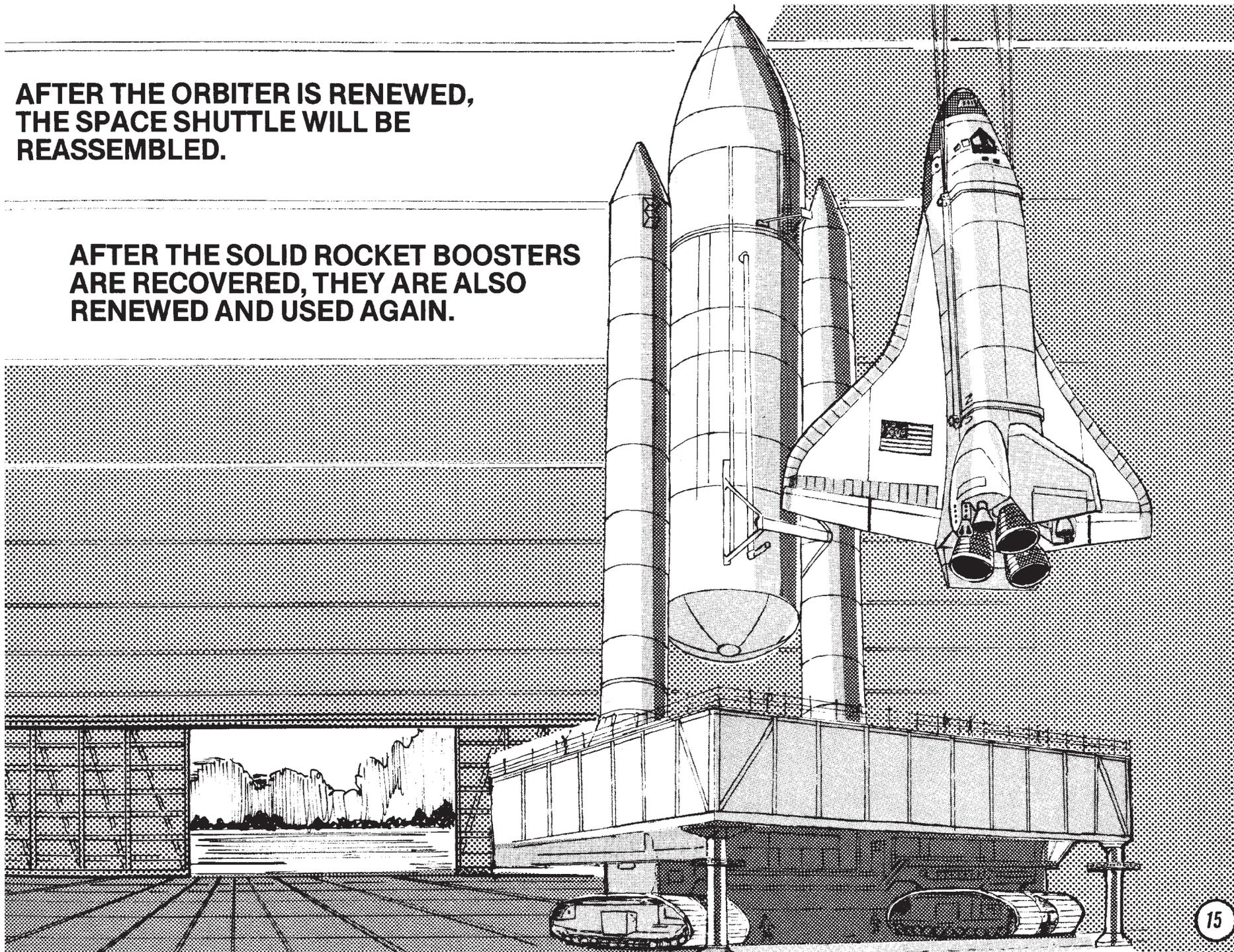
RUBBER
SEAR
EYE
OUR
AISLE
NEVER

| | | | | | | | |
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**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 _____

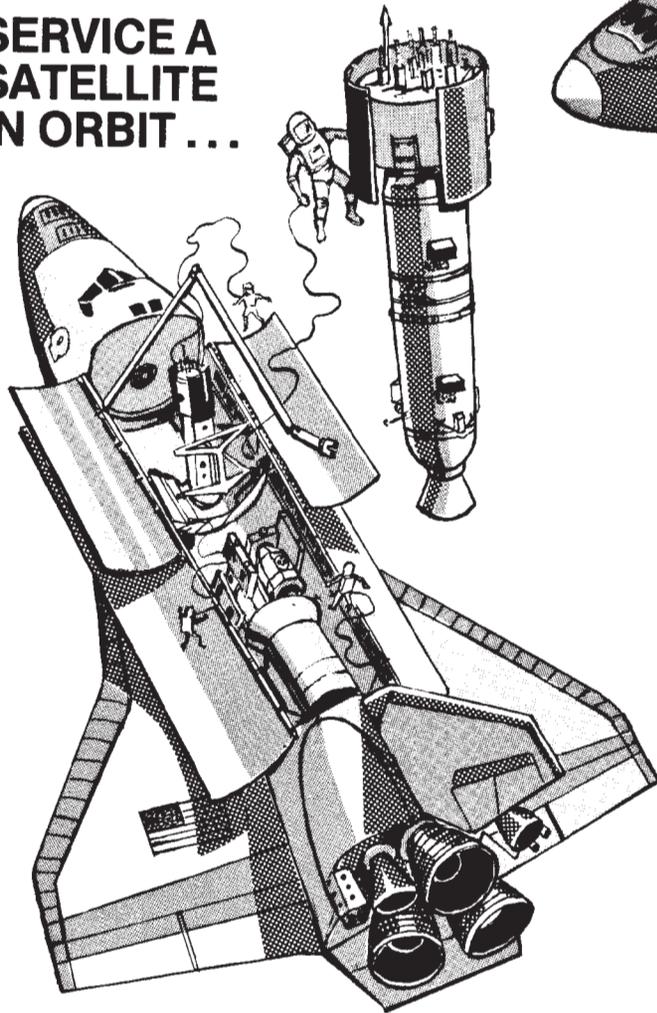
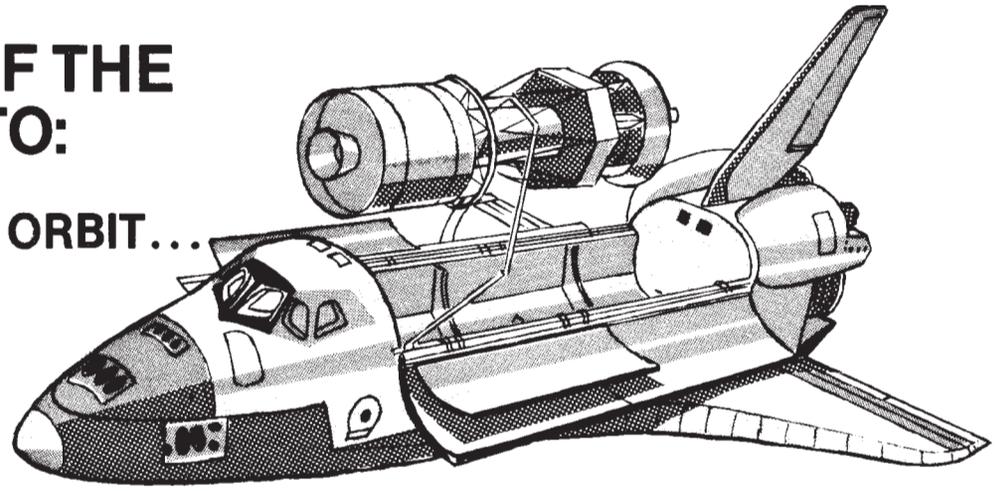
4. PLAROXENITO _____
5. VIPORED FINORAMINOT TOBAU HERATS SECOURERS

ANSWERS ON PAGE 20

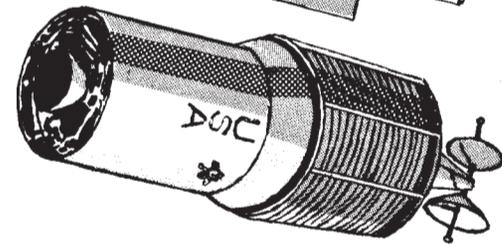
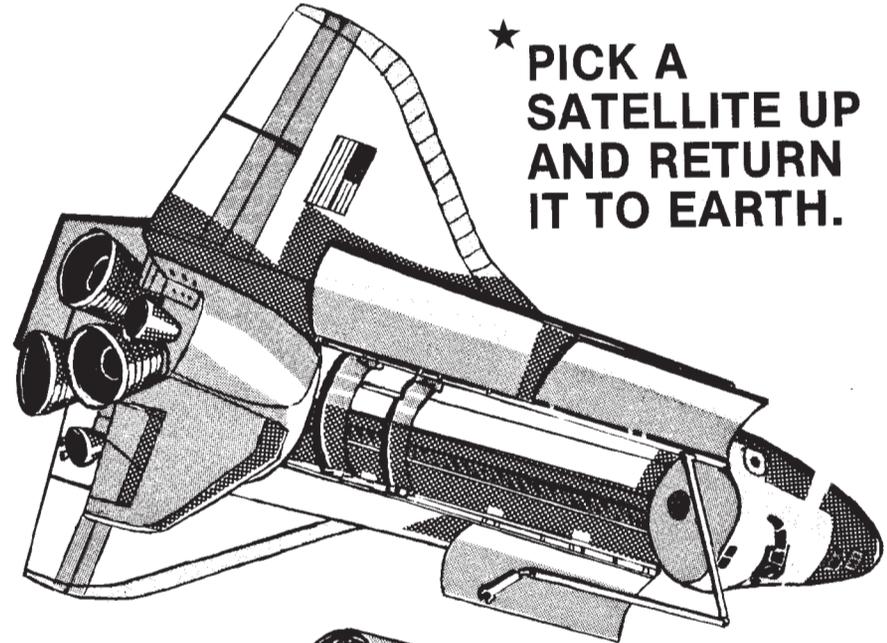
THE MAIN MISSIONS OF THE SPACE SHUTTLE ARE TO:

★ 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

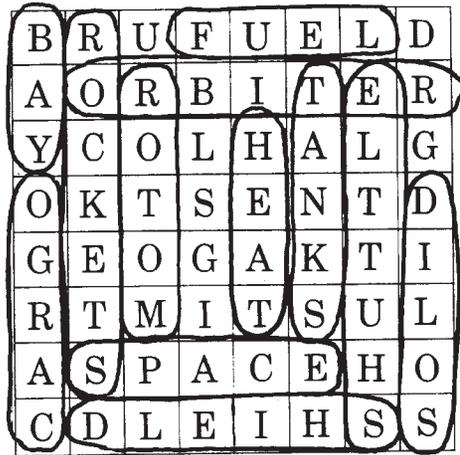
ORBITERS WILL CARRY BUILDING MATERIALS INTO SPACE.

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.

ANSWERS

PAGE 3



PAGE 7

1. OXYGEN
2. SOLID
3. ROCKET
4. PARACHUTE
5. FUEL TANK

PAGE 14

FOURTEEN DAYS

PAGE 16

1. PICK UP SATELLITES
2. SERVICE SATELLITES
3. CONDUCT EXPERIMENTS IN SPACE
4. EXPLORATION
5. PROVIDE INFORMATION ABOUT EARTH'S RESOURCES

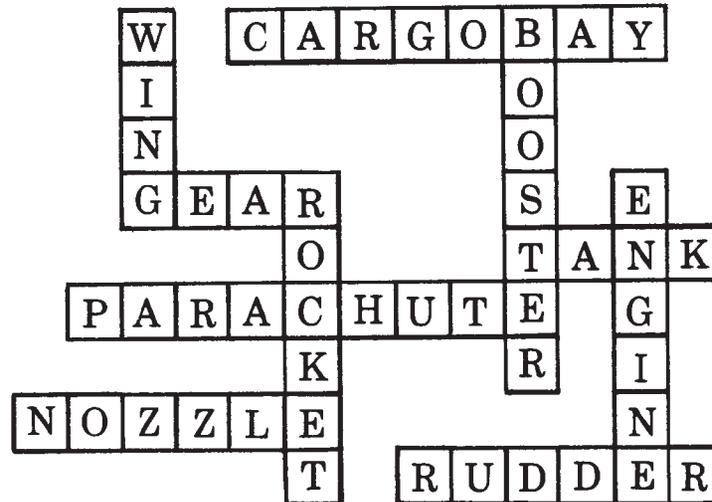
PAGE 9

CARGO HAULING

PAGE 12

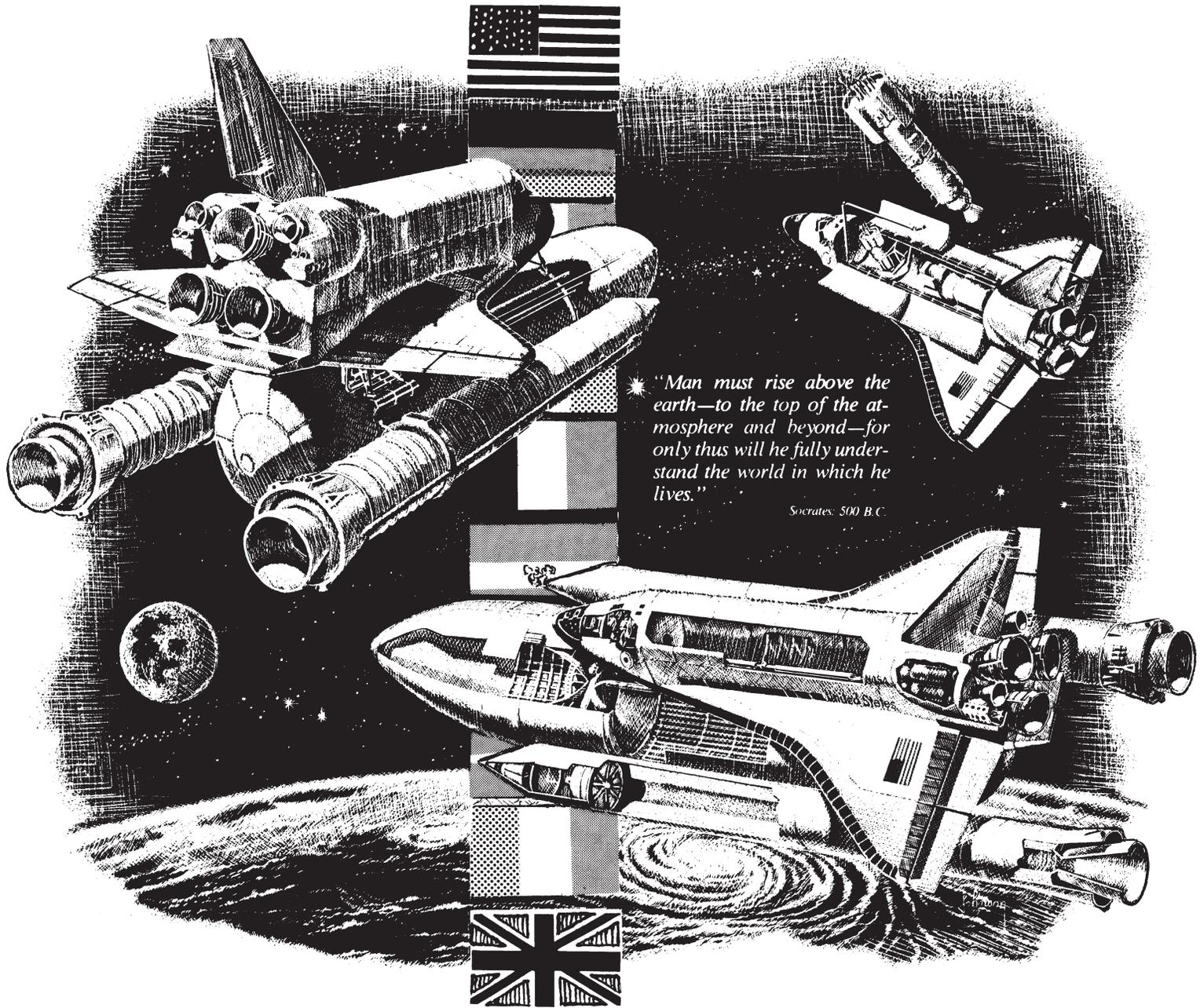
PAGE 5

1. CREW CABIN
2. STEERING ROCKETS
3. CARGO DOORS
4. MAIN ROCKET ENGINES
5. WINGS



PAGE 18

1. SWITZERLAND
2. IRELAND
3. ITALY
4. HOLLAND
5. ENGLAND



"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.