

## Unit 4 Force

### Task 1: Basic Vocabulary

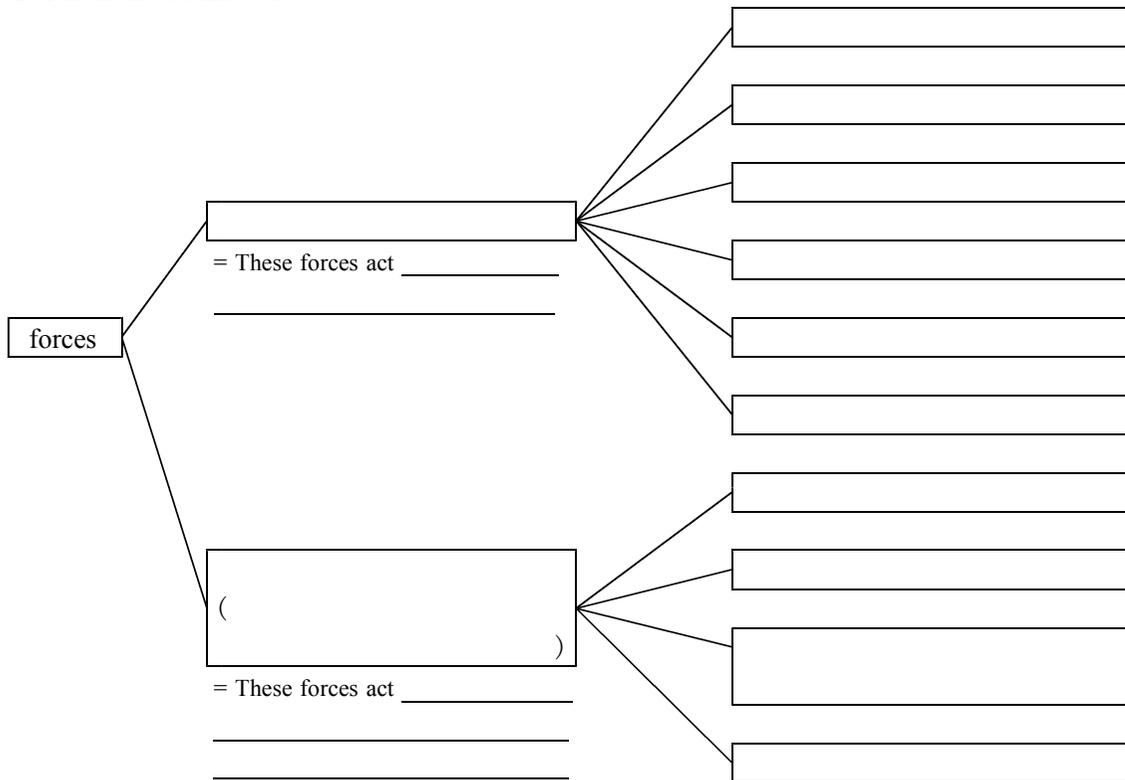
force	_____	physical	_____
object	_____	motion	_____
distance	_____	gravity	_____
proportional	_____	SI unit	_____
act on ~	_____	exert ~	_____
equal	_____	opposite	_____

### Task 2: Read "Forces around Us" on page 24 and answer the questions below.

1. Q: What is a force?

A: It is \_\_\_\_\_  
It \_\_\_\_\_

2. Fill in the blanks below.



### Task 3: Read "Three Elements of Force" on page 24 and 25, and answer the following question.

Q: What is the law of action and reaction?

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

## Unit 5 Motion

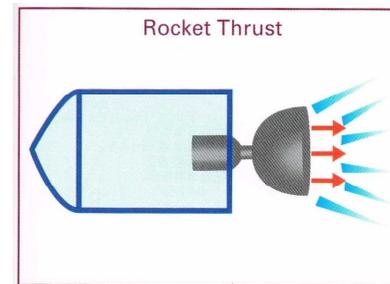
### Task 1: Basic Vocabulary

apply ~	_____	calculate	_____
multiply A and B	_____	equation	_____
according to ~	_____	exhaust gas	_____

### Task 2: Read "Motion" on page 30 and write the meanings of the following word and phrases in Japanese.

outer space	_____	law of inertia	_____
velocity	_____		
uniform linear motion	_____		
uniform accelerated motion	_____		

### Task 3: Presentation "Rocket Thrust": How can a rocket accelerate in outer space?



**Prompter Card**

- How can a rocket accelerate in outer space?
- Remember the law of action and reaction.
- Example: If you throw a ball in outer space, the ball pushes you back.
- A rocket pushes on exhaust gases and they push back the rocket.
- Also remember uniform accelerated motion.
- If a constant force is applied to a moving object, ~.
- If a rocket keeps pushing on exhaust gases, ~

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

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\_\_\_\_\_

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\_\_\_\_\_

## Unit 2 Light

### Task 1: Basic Vocabulary ①

characteristic	_____	object	_____
scatter ~	~を散乱させる	direction	_____
lens	_____	surface	_____
reflect ~	~を	perpendicular	垂直な
bend	_____	phenomenon	_____
※ bend-bent-bent		occur	_____
density	密度	medium	_____

### Task 2: Read "Characteristics of Light" on page 12 and write the meanings of the following words and phrases in Japanese. You learned these things in junior high school!

diffuse reflection	_____	retina	_____
normal	_____	incidence	_____
angle of incidence	_____	angle of reflection	_____
refraction	_____	angle of refraction	_____
total reflection	_____		

### Task 3: Basic Vocabulary ②

be composed of ~	~	gradation	_____
varying	_____	perceive A as B	_____
visible	_____	absorb ~	~を

### Task 4: Read "Color" on page 13 and write the meanings of the following words and phrases in Japanese. You learned these things in junior high school!

wavelength	_____	spectrum	_____
frequency	_____	the infrared	_____
the ultraviolet	_____		

### Task 5: Experiment Describe what occurs in Picture 1 and 2, and explain why it occurs.

A ten-yen coin is placed at the bottom of a paper cup. In Picture 1, you cannot see the coin through the peephole. However, if you \_\_\_\_\_, the figure of the coin appears as is shown in Picture 2. This occurs because the light is \_\_\_\_\_  
 Now I'll tell you why this occurs. Light travels straight, but \_\_\_\_\_

\_\_\_\_\_

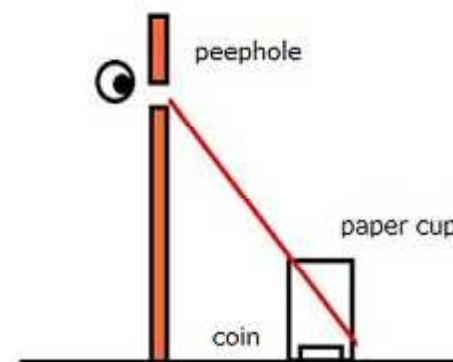
\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

In the case of Picture 2, when the light gets out of the water, it bends this way and that's why you can see the coin in Picture 2. 指さしながら

Picture 1



**Keywords:**

bend (bent) / light / refraction / the speed of light / the density of the medium / the angle of incidence / the angle of refraction / a high-density medium / a low-density medium

Picture 2

