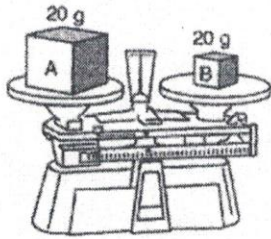


Physical Sci 1 - 100  
The diagram below shows 20 grams of two different materials, A and B, on a laboratory balance.

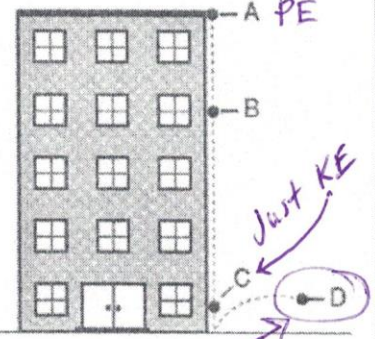


Compared to material A, material B has a different

- (1) density
- (2) mass
- (3) phase
- (4) shape

Physical Sci 1 - 400

- At which position in the illustration as the greatest amount of kinetic energy been transferred due to friction?



Physical Sci 1 - 200

- Two students want to know if a particular catalyst will cause a chemical reaction to proceed more rapidly. Their dependent variable would be this.



dependent variable - rate  
(of reaction)  
Independent - catalyst

Physical Sci 1 - 500

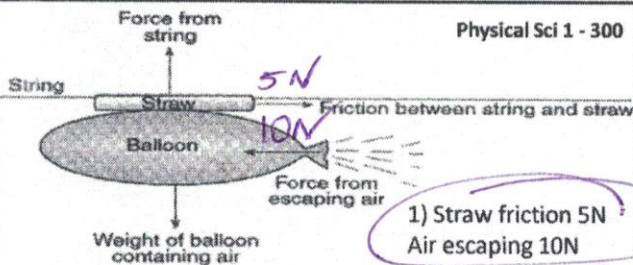
- How much heat was produced by friction in Machine D?

Data Table

Machine	Energy Input (joules)	Heat Produced By Friction (joules)	Energy Output (joules)
A	100	30	70
B	100	10	90
C	100	25	75
D	100	40	60

Law of Conservation of Energy

Physical Sci 1 - 300



If the balloon is moving what must be true of the newtons of force interacting here?

- 1) Straw friction 5N  
Air escaping 10N
- 2) Straw friction 10N  
Air escaping 5N
- 3) Straw friction 5N  
Air escaping 5N

General - 100

Which of the following is the proper order of events for the Scientific Method?

develop a question  
conduct an experiment  
state a hypothesis  
make conclusions  
analyze data

(1)

state a hypothesis  
make conclusions  
develop a question  
analyze data  
conduct an experiment

(3)

make conclusions  
conduct an experiment  
develop a question  
state a hypothesis  
analyze data

(2)

develop a question  
state a hypothesis  
conduct an experiment  
analyze data  
make conclusions

(4)

The average daily air temperature at a certain location increases when there is a seasonal increase in the number of daylight hours. Which graph best shows this change?

**General - 200**

Temp ↑  
Day light hours ↑  
Direct relationship

(1) (2) (3) (4)

**General - 500**

Explain why the air mass centered over zone A is colder and drier than the air mass centered over Zone B?

Canada  
Gulf of Mexico  
Atlantic Ocean

Key  
▲ Cold front  
◐ Warm front

Direction of travel of air mass indicated by fronts,

Which graph best represents the relationship between pollutants in the air and air quality?

**General - 300**

(1) (2) (3) (4)

**Earth 3 - 100**

The length of one day on Earth is determined by how long it takes

- (1) the Moon to revolve once
- (2) the Moon to rotate once
- (3) Earth to rotate once
- (4) Earth to revolve once

The map below shows the current positions of South America and Africa. Points A and B represent areas on the two continents where scientists have discovered fossils of the same animal species.

**General - 400**

- (1) The continents were once joined together.
- (2) The animals were able to swim from one continent to the other.
- (3) Humans transported the animals from point A to point B.
- (4) The animals developed independently on both continents.

How does the Theory of Plate Tectonics explain the location of these fossils?

Pangea

The diagram below represents a portion of Earth's latitude/longitude system. A and B are locations on Earth's surface. The arrows show the direction of Earth's rotation.

**Earth 3 - 200**

If it is noon at location A, then at location B it is

- (1) morning
- (2) noon
- (3) afternoon
- (4) midnight

Earth 3 -300

Most of Earth's major earthquakes are caused by

- (1) seasonal heating and cooling of Earth's surface
- (2) weathering of rock at Earth's surface
- (3) Earth's gravitational attraction to the Moon
- (4) faulting of rock in Earth's crust

Life 4 -100

In which part of a plant cell does photosynthesis occur?

- (1) nucleus
- (2) chloroplast
- (3) cell membrane
- (4) cell wall

Earth 3 -400

Most scientists agree that an increase in the amount of greenhouse gases entering Earth's atmosphere causes

- (1) a decrease in sea level
- (2) a decrease in average surface temperatures
- (3) an increase in melting of polar ice caps
- (4) an increase in crustal plate movement

Life 4 -200

The hydra shown below is reproducing asexually.



What percentage of the offspring's genetic information is the same as the genetic information of the parent?

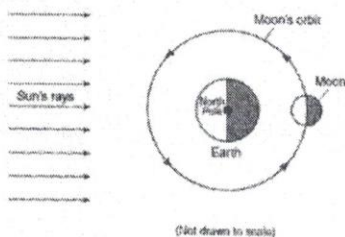
- (1) 25%
- (2) 50%

(3) 75%  
(4) 100%

Asexual reproduction  
100% DNA transfer

Earth 3 -500

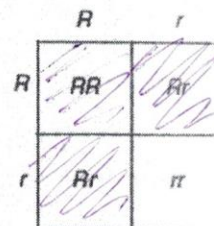
Base your answers to questions 31 and 32 on the diagram below and on your knowledge of science. The diagram represents the motion of the Moon around Earth as seen from above the North Pole. One position of the Moon in its orbit is shown.



31. Which Moon phase will usually be seen from Earth when the Moon is in this position?

- (1)
- (2)
- (3)
- (4)

A Punnett square is shown below. The dominant trait is represented by R. The recessive trait is represented by r.



What percentage of the offspring will most likely show the dominant trait?

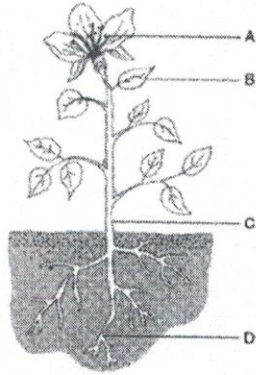
- (1) 25%
- (2) 50%

(3) 75%  
(4) 100%

Full moon are illuminated by sun's rays

Life 4 -400

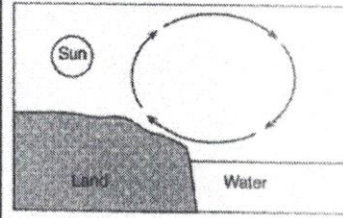
- Correctly identify the following parts of a plant?
- 1. Nutrient storage and absorption
- 2. Production of glucose
- 3. Sexual reproduction



1 D 2 B 3 A

The arrows in the diagram below show the circulation of air on a sunny day.

SCI 8 - 200  
etcetera



And explain what physical property causes this....?

density

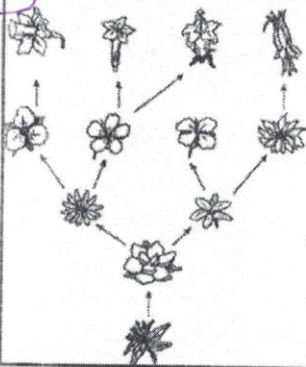
hot - rises  
cool - sinks

The air circulation shown is caused by

- (1) both hot air and cool air sinking
- (2) both hot air and cool air rising
- (3) hot air sinking and cool air rising
- (4) hot air rising and cool air sinking

What is the most likely reason why these early flowers gradually changed to many different types of flowers over time?

- (1) The flowers' traits were genetically engineered.
- (2) The environments of the flowers stayed the same.
- (3) The genetic material of the flowers stayed the same.
- (4) The flowers adapted to environmental conditions.



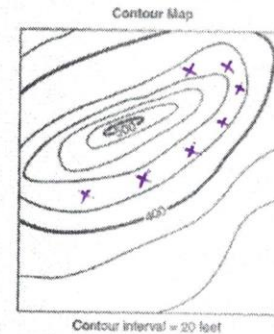
Modern flowers Life 4 -500

Adaptation

Early flowers  
75 million years ago

SCI 8 - 300  
etcetera

The contour map below shows a hill. Two elevations are labeled. Place an X on the map where an elevation of 430 feet could be located. (1)



430' Ft

20 foot increments

Contour interval = 20 feet

SCI 8 -100  
etcetera

- What physical law of energy dictates that the energy input minus heat lost to friction must be equal to energy output?
- To put it in other words, "Energy can neither be created or destroy."

L = C = E

SCI 8 - 400  
etcetera

Solutions of acids and solutions of bases have different properties. Indicators are chemicals that change color when a solution becomes more acidic or more basic. Some indicators and their colors are shown in the table below.

Some Indicators and Their Colors

Indicator	Color in Acidic Solution	Color in Neutral Solution	Color in Basic Solution
bromthymol blue	yellow	green	blue
litmus	red	purple	blue
phenolphthalein	colorless	colorless	pink

Explain why testing a solution with only phenolphthalein would not show whether the solution is acidic or neutral. (1)

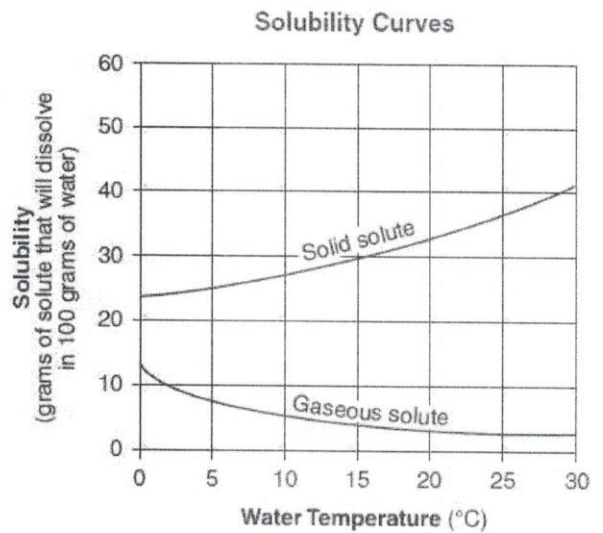
phenolphthalein - only a base indicator

Some acid-base indicators are used to test a sample of lake water. The results are:

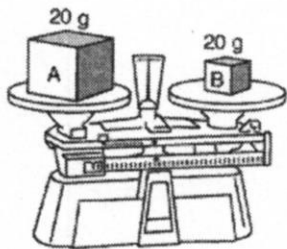
bromthymol blue test --- yellow  
litmus test --- red  
phenolphthalein test --- colorless

As temp. increases solubility of solid solute increases.

As temp. increases solubility of gas solute decreases.



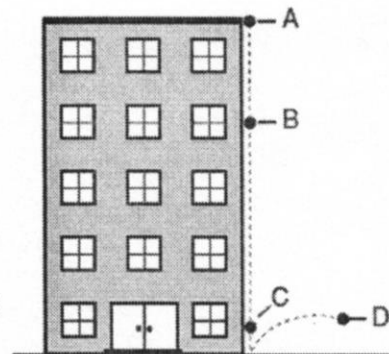
Physical Sci 1 - 100  
 The diagram below shows 20 grams of two different materials, A and B, on a laboratory balance.



Compared to material A, material B has a different  
 (1) density (3) phase  
 (2) mass (4) shape

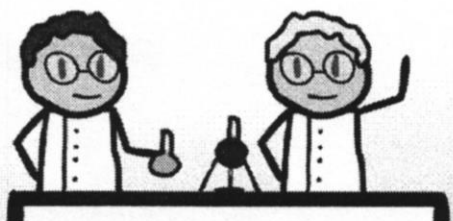
Physical Sci 1 - 400

- At which position in the illustration as the greatest amount of kinetic energy been transferred due to friction?



Physical Sci 1 - 200

- Two students want to know if a particular catalyst will cause a chemical reaction to proceed more rapidly. Their dependent variable would be this.



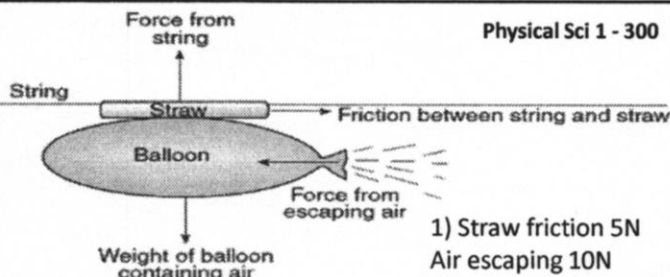
Physical Sci 1 - 500

- How much heat was produced by friction in Machine D?

Data Table

Machine	Energy Input (joules)	Heat Produced By Friction (joules)	Energy Output (joules)
A	100	30	70
B	100	10	90
C	100	25	75
D	100		60

Physical Sci 1 - 300



If the balloon is moving what must be true of the newtons of force interacting here?

- 1) Straw friction 5N  
Air escaping 10N
- 2) Straw friction 10N  
Air escaping 5N
- 3) Straw friction 5N  
Air escaping 5N

General - 100

Which of the following is the proper order of events for the *Scientific Method*?

develop a question  
 conduct an experiment  
 state a hypothesis  
 make conclusions  
 analyze data

(1)

state a hypothesis  
 make conclusions  
 develop a question  
 analyze data  
 conduct an experiment

(3)

make conclusions  
 conduct an experiment  
 develop a question  
 state a hypothesis  
 analyze data

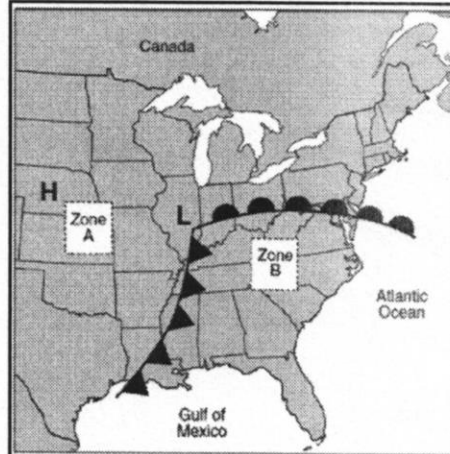
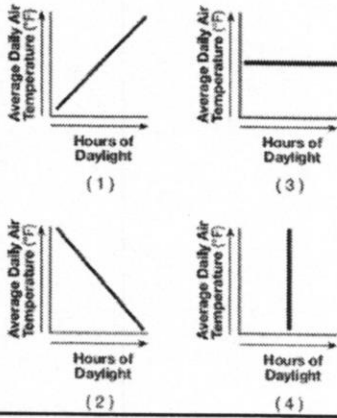
(2)

develop a question  
 state a hypothesis  
 conduct an experiment  
 analyze data  
 make conclusions

(4)

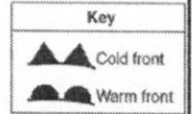
The average daily air temperature at a certain location increases when there is a seasonal increase in the number of daylight hours. Which graph best shows this change?

General - 200



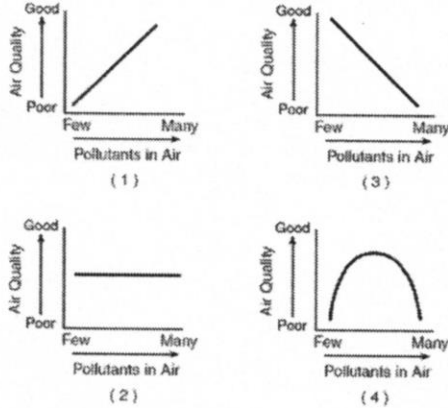
General - 500

Explain why the air mass centered over zone A is colder and drier than the air mass centered over Zone B?



Which graph best represents the relationship between pollutants in the air and air quality?

General - 300



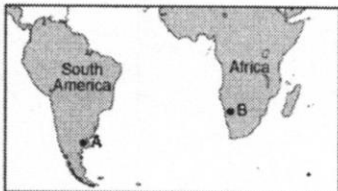
Earth 3 -100

The length of one day on Earth is determined by how long it takes

- (1) the Moon to revolve once
- (2) the Moon to rotate once
- (3) Earth to rotate once
- (4) Earth to revolve once

The map below shows the current positions of South America and Africa. Points A and B represent areas on the two continents where scientists have discovered fossils of the same animal species.

General - 400

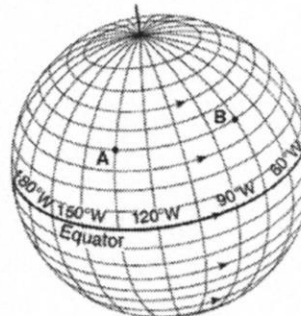


- (1) The continents were once joined together.
- (2) The animals were able to swim from one continent to the other.
- (3) Humans transported the animals from point A to point B.
- (4) The animals developed independently on both continents.

How does the Theory of Plate Tectonics explain the location of these fossils?

The diagram below represents a portion of Earth's latitude/longitude system. A and B are locations on Earth's surface. The arrows show the direction of Earth's rotation.

Earth 3 -200



If it is noon at location A, then at location B it is

- (1) morning
- (2) noon
- (3) afternoon
- (4) midnight

Earth 3 -300

Most of Earth's major earthquakes are caused by

- (1) seasonal heating and cooling of Earth's surface
- (2) weathering of rock at Earth's surface
- (3) Earth's gravitational attraction to the Moon
- (4) faulting of rock in Earth's crust

Life 4 -100

In which part of a plant cell does photosynthesis occur?

- (1) nucleus
- (2) chloroplast
- (3) cell membrane
- (4) cell wall

Earth 3 -400

Most scientists agree that an increase in the amount of greenhouse gases entering Earth's atmosphere causes

- (1) a decrease in sea level
- (2) a decrease in average surface temperatures
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- (4) an increase in crustal plate movement

Life 4 -200

The hydra shown below is reproducing asexually.

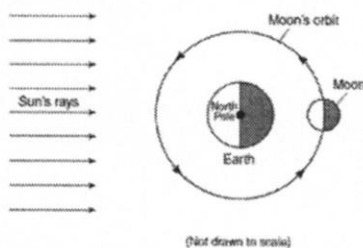


What percentage of the offspring's genetic information is the same as the genetic information of the parent?

- (1) 25%
- (2) 50%
- (3) 75%
- (4) 100%

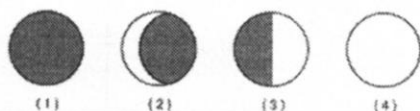
Earth 3 -500

Base your answers to questions 31 and 32 on the diagram below and on your knowledge of science. The diagram represents the motion of the Moon around Earth as seen from above the North Pole. One position of the Moon in its orbit is shown.



(Not drawn to scale)

31 Which Moon phase will usually be seen from Earth when the Moon is in this position?



- (1)
- (2)
- (3)
- (4)

A Punnett square is shown below. The dominant trait is represented by *R*. The recessive trait is represented by *r*.

	<i>R</i>	<i>r</i>
<i>R</i>	<i>RR</i>	<i>Rr</i>
<i>r</i>	<i>Rr</i>	<i>rr</i>

What percentage of the offspring will most likely show the dominant trait?

- (1) 25%
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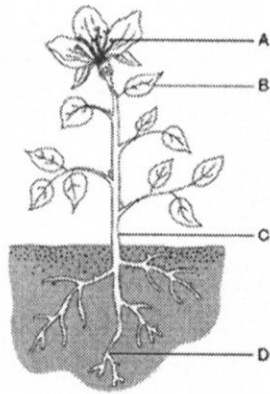


Life 4 -400

• Correctly identify the following parts of a plant?

1. Nutrient storage and absorption
2. Production of glucose
3. Sexual reproduction

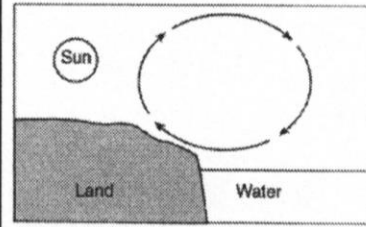
1 \_\_\_ 2 \_\_\_ 3 \_\_\_



The arrows in the diagram below show the circulation of air on a sunny day.

SCI 8 - 200  
etcetera

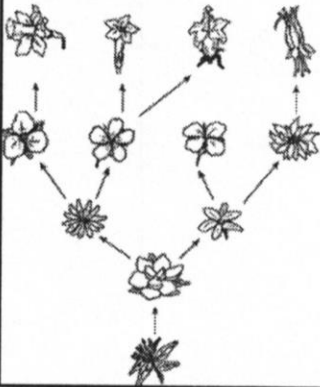
And explain what physical property causes this....?



- The air circulation shown is caused by
- (1) both hot air and cool air sinking
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  - (3) hot air sinking and cool air rising
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What is the most likely reason why these early flowers gradually changed to many different types of flowers over time?

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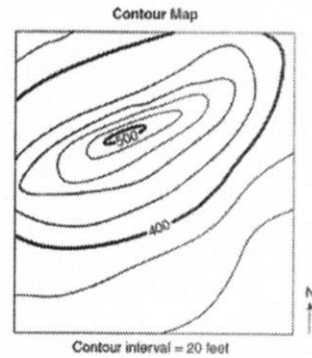
Modern flowers

Life 4 -500

Early flowers  
75 million years ago

SCI 8 - 300  
etcetera

The contour map below shows a hill. Two elevations are labeled. Place an X on the map where an elevation of 430 feet could be located. [1]



SCI 8 -100  
etcetera

- What physical law of energy dictates that the energy input minus heat lost to friction must be equal to energy output?
- To put it in other words, "Energy can neither be created or destroy."

SCI 8 - 400  
etcetera

Solutions of acids and solutions of bases have different properties. Indicators are chemicals that change color when a solution becomes more acidic or more basic. Some indicators and their colors are shown in the table below.

Some Indicators and Their Colors

Indicator	Color in Acidic Solution	Color in Neutral Solution	Color in Basic Solution
bromthymol blue	yellow	green	blue
litmus	red	purple	blue
phenolphthalein	colorless	colorless	pink

Explain why testing a solution with only phenolphthalein would not show whether the solution is acidic or neutral. [1]

Scientists used these three indicators to test a sample of lake water. The results were:

bromthymol blue test --- yellow  
litmus test --- red  
phenolphthalein test --- colorless

### Solubility Curves

