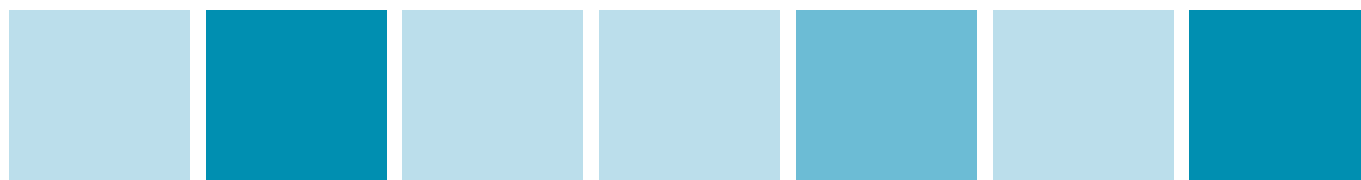


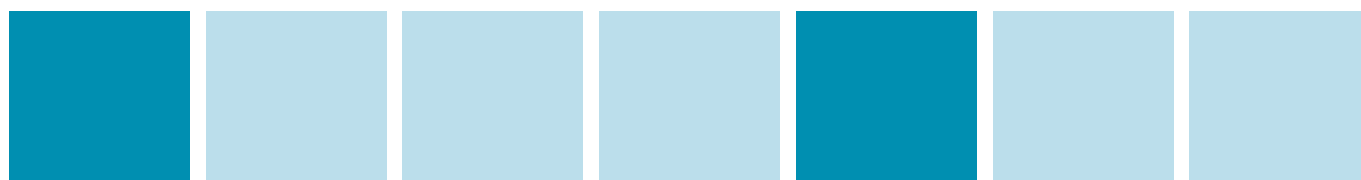


TIMSS 2019 Assessment Frameworks APPENDIX B

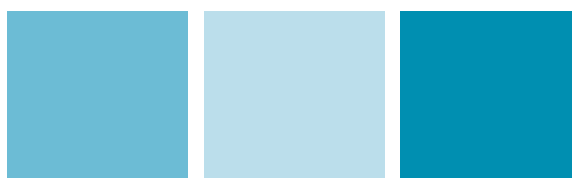
Example Restricted Use Items



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APPENDIX B

Example Restricted Use Items

Grade 4 Mathematics

Subtract:

$$428 - 176$$

Answer: 252

$$\begin{array}{r} ^3 ^{12} \\ 428 \\ - 176 \\ \hline 252 \end{array}$$

M041291

Charlie is 24 years old.

He is $\blacksquare$ years older than Jenny.

Which of the following represents Jenny's age?

☒ $24 - \blacksquare$

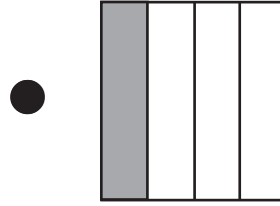
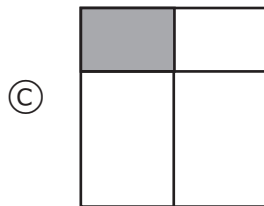
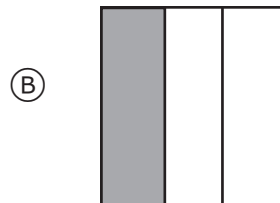
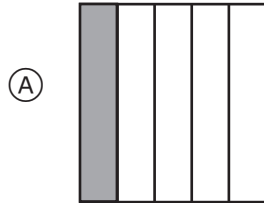
☐ (B) $\blacksquare + 24$

☐ (C) $\blacksquare - 24$

☐ (D) $24 \times \blacksquare$

M051140

Which rectangle is $\frac{1}{4}$ shaded?



M041298

Rule: To find the number in Column B, multiply the number in Column A by 4, then add 1.

Use this rule to fill in the table below.

Column A	Column B
2	9
5	21

$$2 \times 4 + 1 = 9$$

$$5 \times 4 + 1 = 21$$

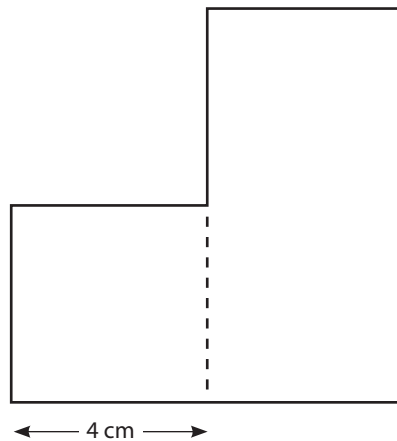
M041124

This shape consists of a square and a rectangle.

The width of the rectangle is the same as the width of the square.

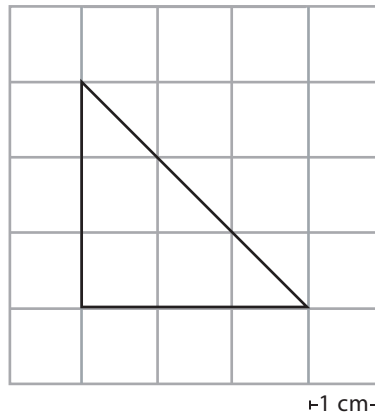
The length of the rectangle is twice as long as its width.

Find the perimeter of the shape.



- (A) 28 cm
- 32 cm
- (C) 36 cm
- (D) 40 cm

M051093

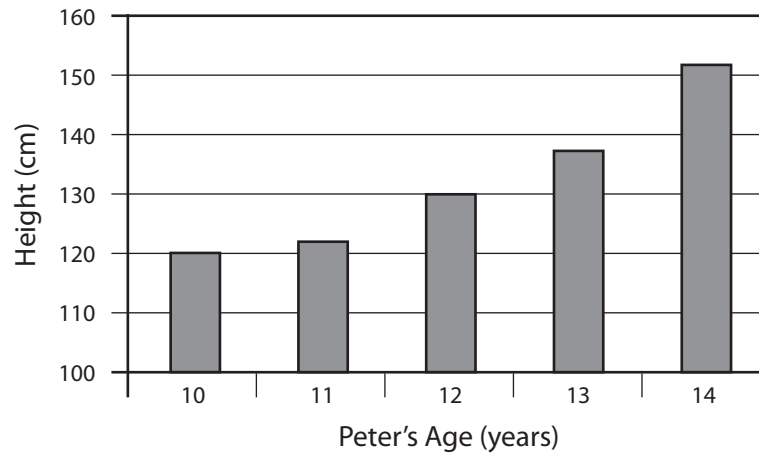


The triangle is on a centimeter grid. What is its area?

- ☒ 4.5 square centimeters
- ☐ (B) 6 square centimeters
- ☐ (C) 9 square centimeters
- ☐ (D) 9.5 square centimeters

M041264

Peter's Height on his Birthday



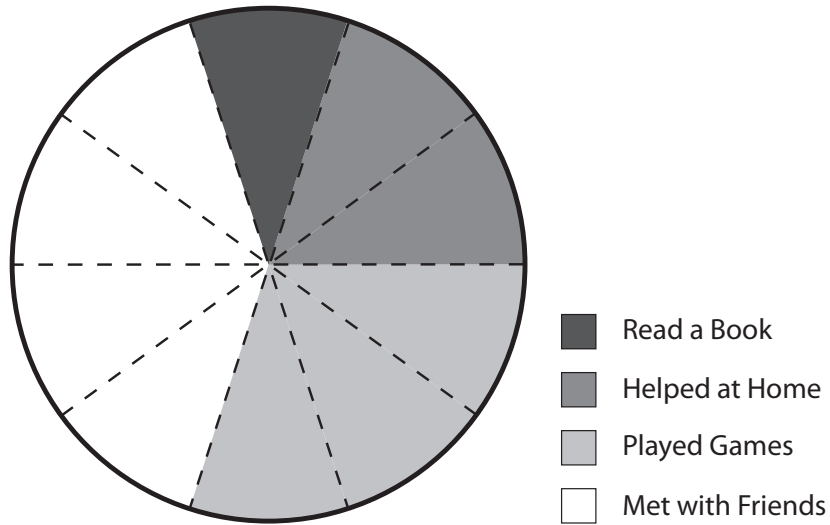
Between which ages did Peter's height increase most?

- (A) 10 and 11
- (B) 11 and 12
- (C) 12 and 13
- ☒ 13 and 14

M041191

This pie chart shows what some students did after school.
The chart is divided into 10 equal sections.

After-School Activities



20 students read a book. How many met with friends?

- (A) 40
- (B) 60
- (C) 80
- (D) 100

M051077

Grade 8 Mathematics

Write this as a decimal number.

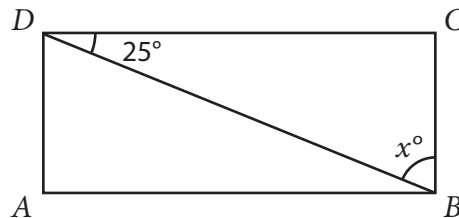
$$8 + 50 + \frac{3}{100} + \frac{1}{10}$$

$$58 + 0.03 + 0.1$$

$$58 + 0.13 = 58.13$$

Answer: 58.13

M042081



$ABCD$ is a rectangle. What is the value of x ?

- (A) 25
- (B) 45
- ☒ 65
- (D) 75

M042203

M042066

Write in the missing term in this sequence:

1, 1, 2, 3, 5, 8, 13, 21, 34, 55.

$$1+1=2$$

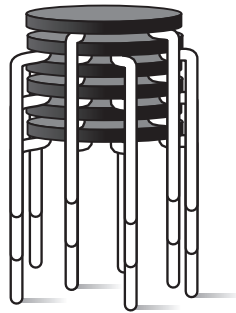
$$1+2=3$$

$$2+3=5$$

$$5+8=13$$

$$8+13=21$$

In John's house there are stools stacked together.



One stool is 49 cm high.

When 2 stools are stacked the stools are 55 cm high.

How high above the ground is the top of a stack of 6 stools?

- ☐ 79 cm
- ☐ (B) 85 cm
- ☐ (C) 110 cm
- ☐ (D) 165 cm

M052142

Peter and Tom went to the same shop to buy some books and pens.

Peter bought 5 books and 2 pens and paid 74 zeds.

Tom bought 1 pen and 3 books and paid 42 zeds.

Which pair of equations could represent this situation?

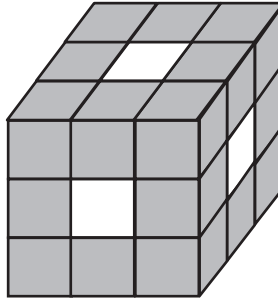
(A) $5x + 2x = 74$
 $y + 3y = 42$

(B) $5x + 2y = 74$
 $x + 3y = 42$

☒ $5x + 2y = 74$
 $3x + y = 42$

(D) $5y + 2y = 74$
 $3x + y = 42$

M052090



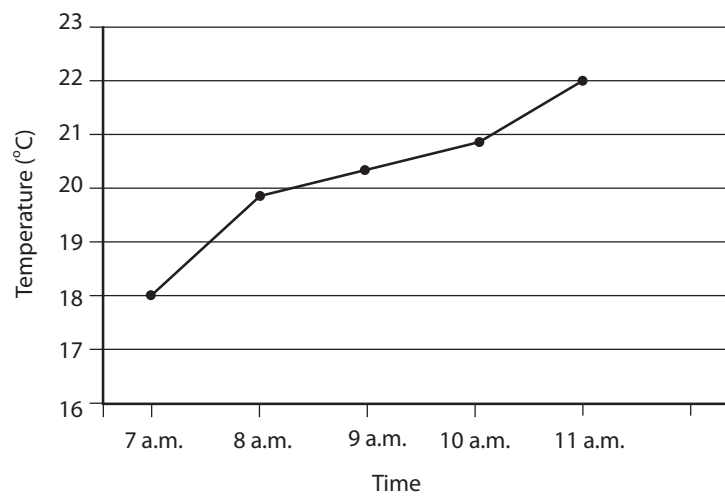
A cube had 27 small, gray cubes. First, the small cube at the center of each face was removed. Then, the small cube in the center was removed.

How many cubes were left in the solid?

- (A) 4
- (B) 16
- ☒ 20
- (D) 24

M042271

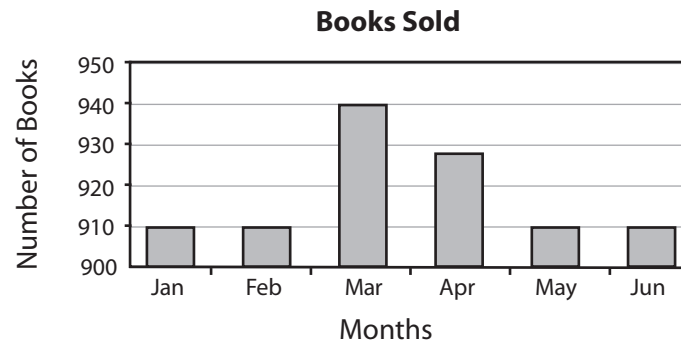
Morning Temperature in Zed City



The graph shows hourly temperatures from 7 a.m. to 11 a.m.
Estimate the temperature at 9:30 a.m.

Answer: 20.5 °C

M042224



A salesman looked at the graph showing his sales of books for the first 6 months of 2004, and said, “In March, I sold four times as many books as I sold in February.”

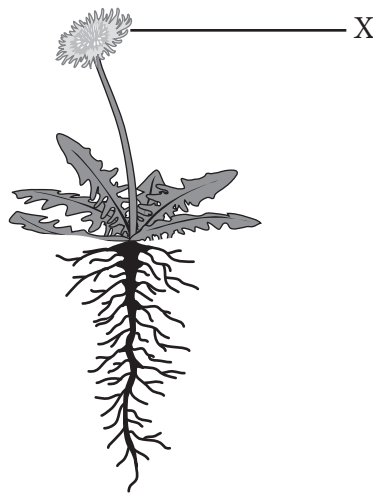
Explain whether you agree or disagree with the salesman, and give a reason.

I disagree because the salesman sold 910 books in February and 940 books in March. 910 times 4 does not equal 940.

M042164

Grade 4 Science

The diagram shows a flowering plant.



What is a function of the part of the plant labeled X?

- (A) to make food
- (B) to transport food
- (C) to produce seeds
- (D) to absorb water

S041223

Sara wants to know if fertilizer has any effect on the growth of plants.

She has four pots containing the same type of soil. She puts plants in each pot and adds fertilizer to two of the pots as shown below.

			
Pot 1	Pot 2	Pot 3	Pot 4
Fertilizer	Fertilizer	No fertilizer	No fertilizer

Which two pots should she compare to find out if fertilizer has any effect on the growth of plants?

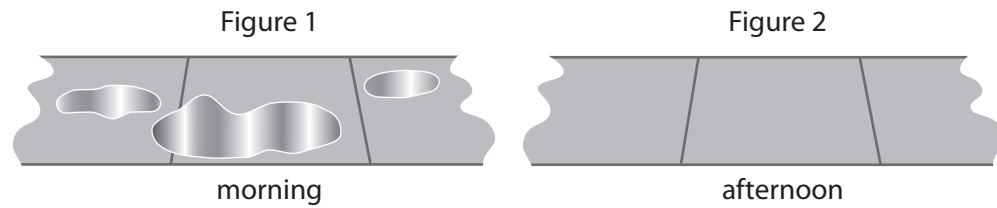
Pot 1 and Pot 3.

Explain your answer.

Pots 1 and 3 have the same
type of flower

S051008

Figure 1 shows some puddles of water on a concrete sidewalk in the morning. In the afternoon, the concrete sidewalk was dry as shown in Figure 2.



What happened to the water?

- ☒ It went into the air.
- ☐ It turned to dust.
- ☐ It was used by trees.
- ☐ It spilled into the road.

S051105

Which material is the best conductor of heat?

- ☐ wood
- ☒ metal
- ☐ glass
- ☐ plastic

S041191

Mike took four items from his kitchen and tested them to see whether they dissolved in water. He also touched them to see how hard they were. He wrote his results in a table, as shown below.

	Hard	Soft
Dissolves in water	Sugar cube	Honey
Does not dissolve in water	Metal spoon	Sponge

Mike found four more items, as shown below.



jelly



rock salt



rubber ball



glass bottle

Which item is in the same group as the sponge?

- Ⓐ jelly
- Ⓑ rock salt
- rubber ball
- Ⓓ glass bottle

S041050

The pictures below show a shadow at three different times of the day.

9 a.m.



12 noon



5 p.m.



Explain why the shadows changed.

The shadows changed because the sun changed position in the sky

S041113

Water flows across Earth's surface.

In which direction does it flow?

- ☒ mountains → rivers → oceans
- ☐ (B) oceans → mountains → rivers
- ☐ (C) rivers → oceans → mountains
- ☐ (D) mountains → oceans → rivers

S051102

Grade 8 Science

Look at the list of organisms.

fish ant frog spider earthworm bird whale

Classify the organisms into two groups based on a physical or behavioral characteristic.

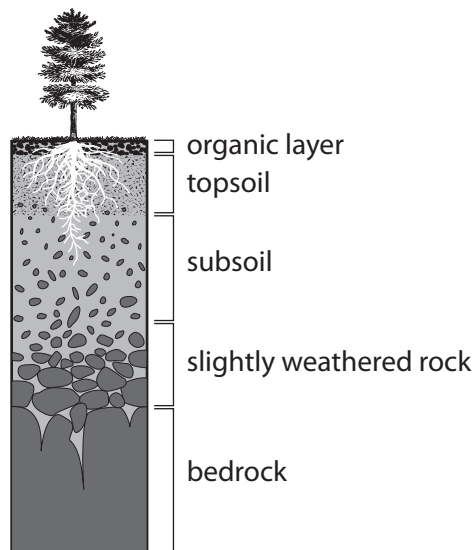
Group 1	Group 2
fish frog bird whale	ant spider earthworm

Write down the characteristic you used to classify the organisms.

Group 1 has a backbone and group 2 does not have a backbone

S042005

The diagram shows layers in the soil.

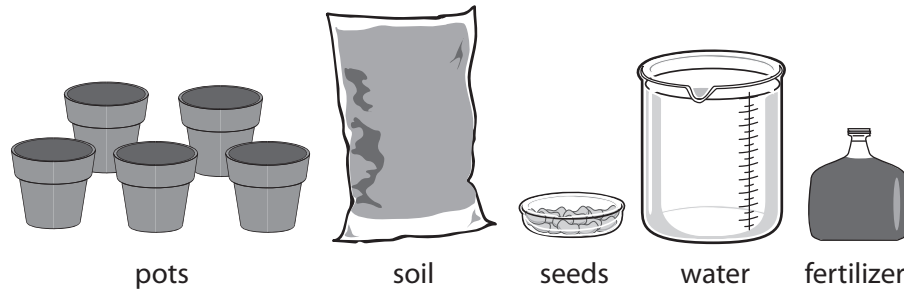


Most plants have roots that grow in the topsoil, but some have roots that reach into the subsoil.

Write two advantages for a plant to have long roots that go down into the subsoil.

1. Long roots anchor the plant better.
2. Long roots can reach more water.

S052116



Using the equipment above, describe an investigation to find out how fertilizer affects the growth of plants.

Put the same amount of soil in each pot.
Add 2 seeds to each pot.
Add the same amount of water to each pot and the same amount of fertilizer to 3 pots. Do not add fertilizer to the other 2 pots.

The table below lists some properties of water, mercury, and iron.

	State at Room Temperature (20°C)	Melting Point (°C)	Boiling Point (°C)
Water	Liquid	0	100
Mercury	Liquid	-39	357
Iron	Solid	1,530	2,450

What is the state (solid, liquid, or gas) of water, of mercury, and of iron at 350°C?

Water: gas

Mercury: liquid

Iron: solid

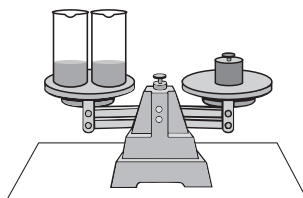
S052145

Which is an example of a chemical process that releases energy?

- ☐ (A) water boiling
- ☐ (B) raw egg cooking
- ☒ (C) oil lamp glowing
- ☐ (D) white sugar dissolving

S052063

Two beakers, one containing hydrochloric acid and the other containing sodium hydroxide exactly balance a weight, as shown in the diagram.



The two solutions are carefully mixed together, and the empty beaker is put back on the balance.

Look at the diagrams below.

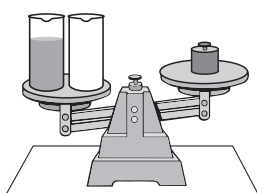


Diagram A

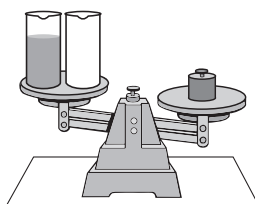


Diagram B

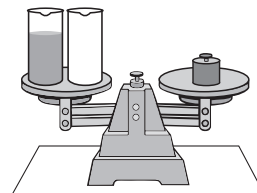


Diagram C

Which diagram shows the balance after the solutions have been mixed?

(Check one box.)

☐ Diagram A

☐ Diagram B

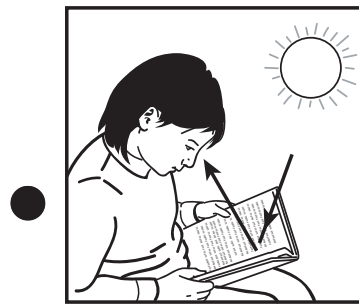
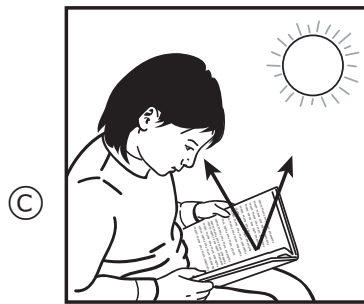
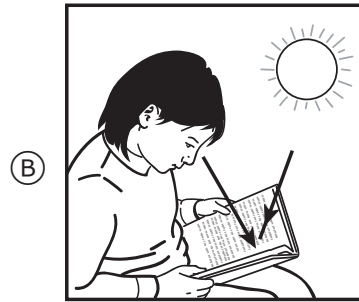
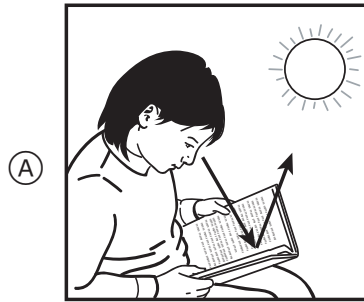
☒ Diagram C

Explain your answer.

When 2 chemicals are combined, the mass is the same before and after they are mixed.

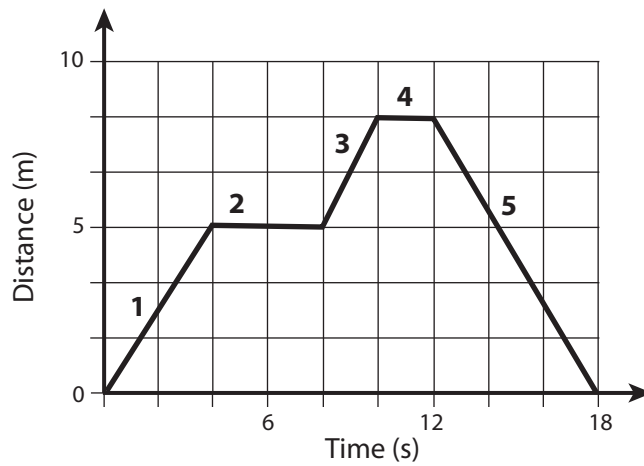
A student is reading a book.

Which diagram shows the direction in which light travels so that she can read the book?



S042216

A toy car moves in a straight line. A graph of the car's distance from the starting point over 18 seconds is shown below.

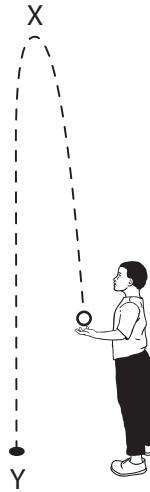


Which of the following best describes the motion of the toy car during each of the five segments?

	Segment				
	1	2	3	4	5
☒	moving forward	not moving	moving forward	not moving	moving backward
☐ (B)	not moving	moving backward	not moving	moving backward	moving forward
☐ (C)	moving forward	not moving	moving backward	not moving	moving backward
☐ (D)	moving backward	not moving	moving backward	not moving	moving forward

S062268

Jeffrey throws a ball up into the air, as shown in the diagram. It reaches its highest point at X and then falls straight down to the ground at point Y. The ball then bounces straight up again.



A. What force causes the ball to fall from point X to point Y?

gravity

B. When the ball bounces up again, will it bounce higher than, lower than, or to the same height as point X?

(Check one box.)

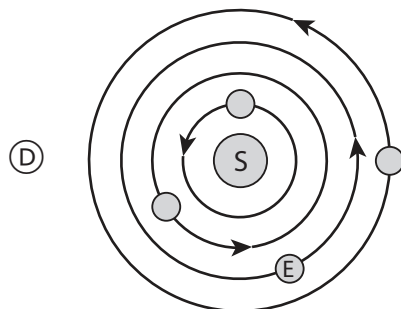
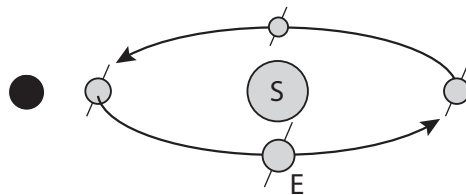
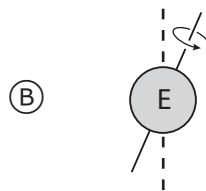
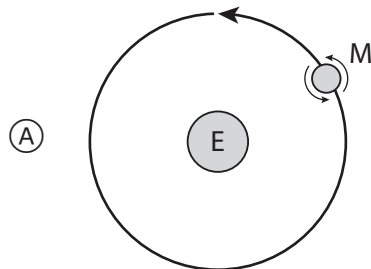
- ☐ Higher than point X
☒ Lower than point X
☐ Same height as point X

Explain your answer.

The ball loses energy when it bounces, so it cannot bounce as high as X the second time.

S042293

Which diagram below can be used to explain the changing seasons during the year for most places north or south of the equator? In the diagrams, S is the Sun, E is the Earth, and M is the Moon.



S062271



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