

General Inspire Science Grade 8 EOT1 Practice Questions 2024 -2025
أسئلة هيكل السادس انسابير الصف الثامن الفصل الأول للعام الدراسي 2024-2025

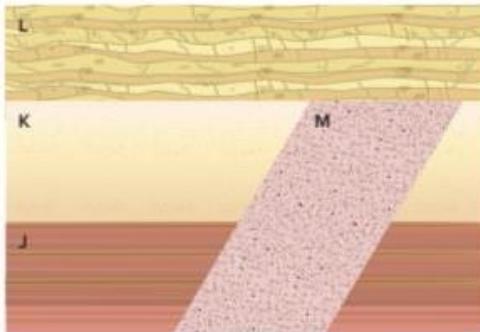
No.	Example	MCQ	الاختبار الإلكتروني
1	<p>The Present Is the Key to the Past</p> <p>Compare the images of erosion below.</p>  		Unit1 page 10
2	<p> THREE-DIMENSIONAL THINKING</p> <p>Scientists use the principle of uniformitarianism to interpret Earth's history. Suppose you discover a rock from an ancient beach. Now imagine you are standing on that ancient beach. What do you think would you see? Explain how your answer relates to the principle of uniformitarianism.</p> <p>If you stand on a shore of an ocean and watch the waves come in, you are observing a process that has not changed since the oceans formed. Using the principle of uniformitarianism, you can infer that you would see waves eroding the shore of the beach just as they do today.</p>		Unit1 page 11
3			Unit1 page 16
	<p>5. Notice the large fault cutting across the rock layers. Do you think the fault and the rock layers are the same age? why or why not ?</p> <p>No. The rock layers formed slowly over time. The fault cuts across all of the layers. This could not have occurred while the rock layers were forming.</p>		

4



Three-Dimensional Thinking

Imagine you are a geologist. You have been asked to analyze and interpret the rock sequence below. Your task is to determine the relative ages of the rocks.



Unit1 page 25

2. Order the features in the illustration from oldest to youngest.
 - A. JKLM
 - B. MJKL
 - C. JKML
 - D. MLKJ

3. Which geologic principle must be assumed to determine the relative age of M?
 - A. cross-cutting relationships.
 - B. superposition
 - C. original horizontality
 - D. inclusions

5

What is the importance of DNA?

Unit1 page 63

Genes provide directions for a cell to assemble molecules that express traits.

Which statement correctly describes the relationship between genes and DNA?

- A. DNA is found inside the nucleus of a cell, while genes are found outside the nucleus.
- B. A gene is a segment of DNA.
- C. DNA is a segment of a gene.
- D. Genes and DNA are not related.

What is a chromosome made of?

- A. DNA and proteins
- B. only proteins
- C. only nucleic acids
- D. carbohydrates and lipids

How does the structure of DNA allow it to store a lot of information in a small space?

- A. The DNA is spread out across the cell.
- B. The DNA is embedded in proteins.
- C. The DNA strands are tightly coiled.
- D. The DNA is folded into large bundles.

6

*What is transcription?

The process of making mRNA from DNA

Unit1 page 68-69

* What is translation?

The process of making a protein from RNA

- The helps form chemical bonds between amino acids during translation.

A. tRNA

B. rRNA

C. DNA

D. mRNA

- What is the main product of transcription?

A. a new DNA strand for cell division

B. a sequence of amino acids for proteins

C. an mRNA strand from DNA

D. a newly formed ribosomal subunit

- How are transcription and translation related?

A. both processes occur in the cell's cytoplasm

B. translation modifies the DNA that is created during transcription

C. transcription provides the RNA that is used in translation

D. both processes involve the synthesis of proteins

7

Unit2 page 23

MATH Connection The motion of a person or object can be explained by examining how the position changes over time. Practice using the mathematical model, the average speed equation.

1. A truck driver makes a trip that covers 2,380 km in 28 hours. What is the driver's average speed in km/h?

$$2380 / 28 = 85 \text{ km/h}$$



2. What is the average speed of a soccer ball that travels 34 m in 2.0 s?

$$34 / 2 = 17 \text{ m/s}$$

3. How long would it take a bus traveling at 52 km/h to travel 130 km?

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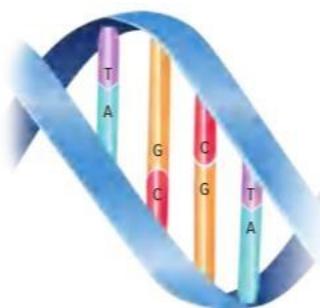
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Unit1 page 77

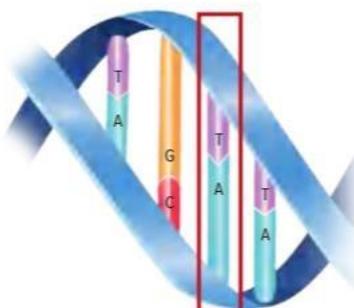


Three-Dimensional Thinking

Use the diagram below to answer the following questions.



Before Replication



After Replication

2. The diagram above shows a segment of DNA before and after replication. Which could have occurred as a result of this change in structure?

- A changes to the genotype of the organism
- B changes to the traits of the organism
- C changes in the production of proteins
- D all of the above

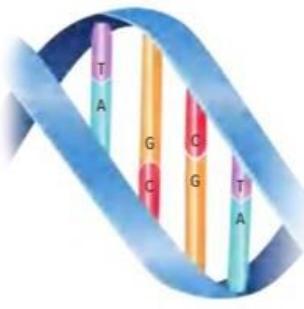
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Unit1 page 77

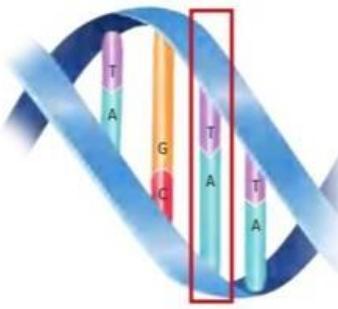


Three-Dimensional Thinking

Use the diagram below to answer the following questions.



Before Replication



After Replication

3. The mutation shown above resulted in muscle degeneration. The effect of this mutation is that muscles become progressively weaker. What type of mutation is this?

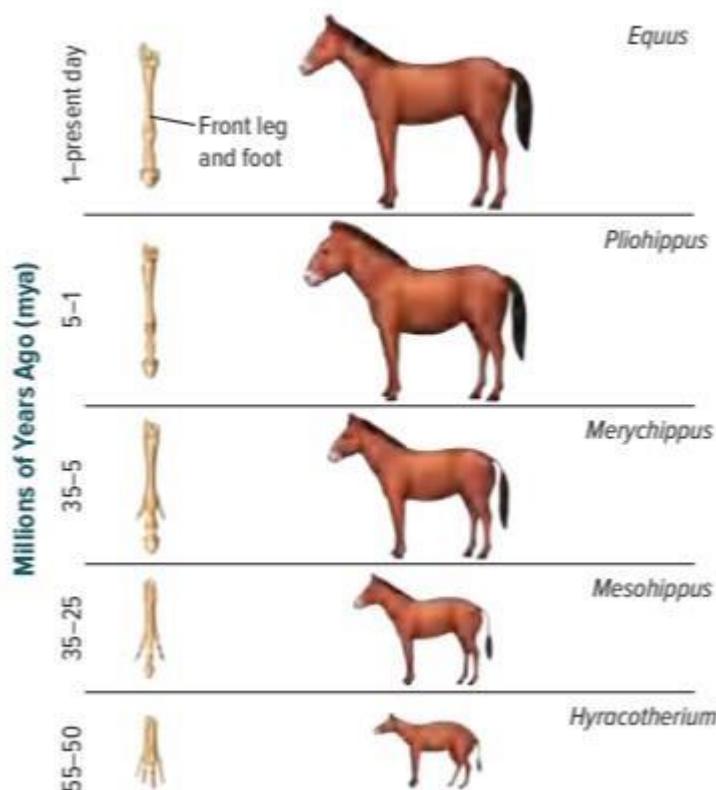
- A positive
- B neutral
- C negative
- D none of the above

10 Real-World Connection

4. **Write** Your English teacher has asked you to write a short story about a superhero with a mutation that causes powers, using a real factor that causes mutations. Identify your character below, and describe the cause and effects of the mutation. Explain how your superhero models a negative, positive, or neutral mutation.

Unit1 page 78

Students must identify a real cause of mutations. Answers may include exposure to X-rays, ultraviolet light, radioactive materials, and exposure to some chemicals. Students should also include in their story the effects of the mutation/what super powers their hero has due to the mutation. Finally, students should explain how their superhero models a negative, positive, or neutral mutation.

11**Unit1 page 141****THREE-DIMENSIONAL THINKING**

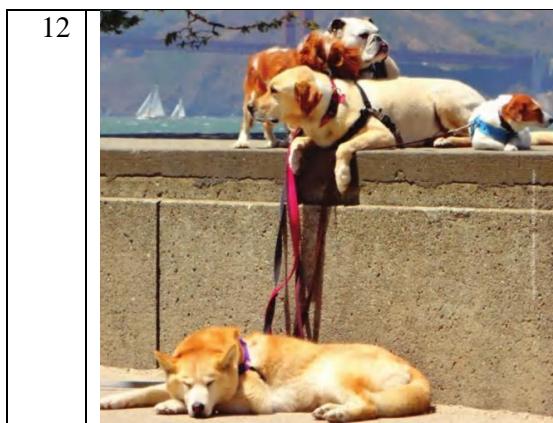
Examine the chart of the evolution of horses above. What **patterns** of **change** have occurred over 55 million years?

Horses seem to have grown larger and taller. They now seem better equipped to evade predators with their longer, stronger legs.

COLLECT EVIDENCE

What can patterns in the fossil record tell us about evolution? Record your evidence (B) in the chart at the beginning of the lesson.

Patterns in the fossil record show how modern animals are related to extinct species and how species change over time in what appears to be a sequence.



ENCOUNTER | **THE PHENOMENON**

Why do all of these dogs look different?

Unit1 page 103

That dog breeders allow for dogs with favorable traits to breed.

13

How can humans influence traits of organisms, such as dogs, through selective breeding? **by the process selective breeding. humans breed species like dogs and select a specific set of desirable traits that occur naturally in populations.**

Unit1 page 108

14

What can fossils tell us about time?

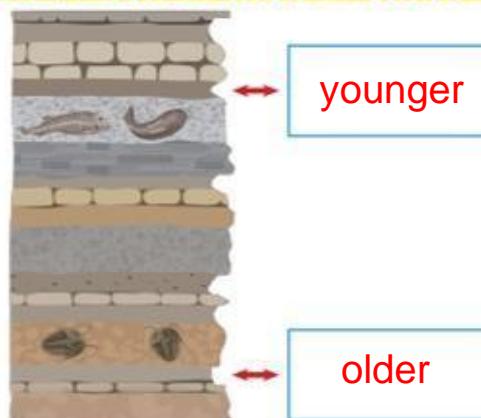
Unit1 page 136

INVESTIGATION

Analyze the Age

In the image you can see fossils buried in rock layers. Examine the image and answer the questions below.

1. If the topmost rock layer of the image is present day, then what is the relative age of the areas that are indicated by the arrows to each other? Infer the age of the areas by writing *older* or *younger* in the boxes provided.
2. Why did you place the words *older* or *younger* in those locations?



I inferred that the top-most fossils existed more recently than those towards the bottom.

3. What do you think the placement of fossils in the rock layers above can tell us about time?

I think that the placement of fossils in the rock layers can tell us when they lived. They may also help tell us when other fossils lived, relative to their position.

15



THREE-DIMENSIONAL THINKING

What **patterns** exist between all forces that you apply to objects or **systems** of objects?

Unit2 page 64

When you push an object, the object will push back with the same amount of force. This is true for all forces.

16



COLLECT EVIDENCE

How does modeling Newton's third law help explain what happens when an airboat pushes on the air?

Unit2 page 67

Newton's Third Law states: "For every action, there is an equal and opposite reaction." The modeling of Newton's Third Law shows that when the airboat's pushes air backward (**action**), the airboat itself is pushed forward (**reaction**).

17



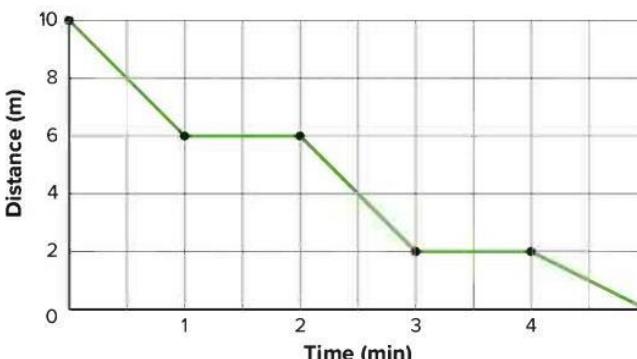
Unit1 page 97

Identify each image as either representing camouflage or mimicry

The image on the left represents camouflage. The image on the right represents mimicry.

Which structural adaptation allows animals to use their physical appearance to avoid predators?

- A. mimicking other species to confuse predators
- B. using bright colors to attract predators
- C. living in herds to protect themselves from predators
- D. making loud noises to scare predators away

18	<h3>COLLECT EVIDENCE</h3> <p>How do adaptations affect organisms, such as orchid plants?</p> <p>The orchid mimics a female bee. The male bee lands on the flower and picks up pollen, and transfers it to other flowers that help orchid to reproduce.</p>	Unit1 page 97
19	<h3>Real-World Connection</h3> <p>5. Brainstorm Do you own clothes with a camouflage pattern? These are designed to help you blend in outdoors. What other organisms can you think of that use camouflage? Explain the benefit(s) that this provides the organism.</p> <p>Yes, I have camouflage clothing. An example of another organism with camouflage is a frog that is green and blends in with grass or moss. This prevents it from being seen by predators.</p>	Unit1 page 100
20	<h3>Real-World Connection</h3> <p>4. Interpret Data The plot below shows the motion of an elevator. Explain its motion.</p>  <p>The elevator went down 4 m at a constant speed for 1 min. It then stopped for 1 min. It went down 4 m in 1 min, stopped for 1 min, and went down 2 m in the final minute.</p>	Unit2 page 32
21	<p>5. Calculate A driver travels 55 km in 1 hour. He then drives at a speed of 35 km/h for 2 hours. Next, he drives 175 km in 3 hours. What was his average speed?</p> <p>50 km/h $55 + 70 + 175 = 300$ $300 \div 6 = 50$</p>	Unit2 page 32
22	<h3>ENCOUNTER THE PHENOMENON</h3> <p>What happens to the motion of the water tube when it's pushed or pulled?</p> <p>Motion can change with an acceleration forward. The water tube can turn and move up and down in the air.</p>	Unit2 page 35

23	<p> COLLECT EVIDENCE</p> <p>How does friction's effect on motion help explain what happens when you push or pull a water tube?</p> <p>Friction is a force that opposes the motion of the water tube. Friction acts to slow the water tube.</p>	Unit2 page 47
24	<p> COLLECT EVIDENCE</p> <p>How does modeling Newton's third law help explain what happens when an airboat pushes on the air?</p> <p>Newton's Third Law states: "For every action, there is an equal and opposite reaction." The modeling of Newton's Third Law shows that when the airboat's pushes air backward (action), the airboat itself is pushed forward (reaction).</p>	Unit2 page 67
25	<p>Real-World Connection</p> <p>5. Explain When you run, your feet are pushing you forward. Friction keeps your foot in contact with the ground. According to Newton's third law, you are pushing the ground back. Construct an explanation for why Earth is not changing its motion.</p> <p>The acceleration of an object is dependent on the mass. The mass of Earth is much greater than the mass of my body, so it appears that Earth is not moving. The change in the motion of Earth is too small to be noticeable.</p> <p>6. Explain To steer an airboat, rudders sit behind the fan. When the air passes through the turned rudders, it turns the boat. Use Newton's third law to construct an explanation on how the rudders turn the boat.</p> <p>The rudders push the air to one side. Because of Newton's third law, the air pushes the boat in the other direction. This is how the rudders turn the boat.</p>	Unit2 page 74
26	<p> COLLECT EVIDENCE</p> <p>How does the relationship between mass and gravity and the relationship between distance and gravity explain why the skydiver fell as she did?</p> <p>Gravitational force depends on mass, so that the larger the mass involved the greater the gravitational force. And the greater the distance between the objects, the smaller the force becomes.</p>	Unit2 page 86
27	<p>Real-World Connection</p> <p>5. Predict If an astronaut moved away from Earth in the direction of the Moon, how would the gravitational force between Earth and the astronaut change? How would the gravitational force between the Moon and the astronaut change?</p> <p>The gravitational force between Earth and the astronaut would decrease. The gravitational force between the Moon and the astronaut would increase.</p> <p>6. Explain You overhear someone say the gravitational force between two 50-kg objects is less than the gravitational force between a 50-kg object and a 5-kg object. What question could you ask this person in order to challenge their argument? Explain.</p> <p>What effect does the distance between the two objects have on the gravitational force? The gravitational force between the two 50-kg objects could be less than the gravitational force between a 50-kg object and a 5-kg object if the two 50-kg objects are much farther apart.</p>	Unit2 page 94

الاختبار الكتابي Paper Part FRQ

28



Unit1 page 14

1. Do you think all of the rock layers in the picture formed at the same time? Why or why not?

No. sedimentary rock forms slowly over time. The sediments must be compressed and lithified before they turn into rock layers. The colors of the layers also indicate differences between the rocks.

29



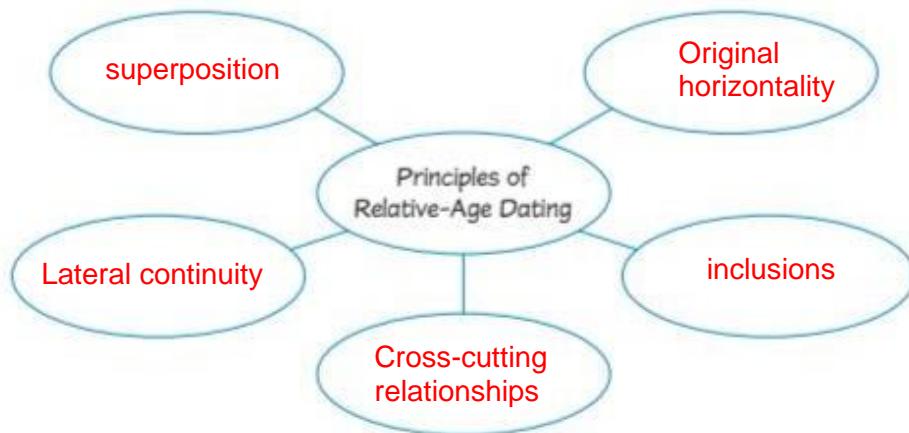
Unit1 page 14

2. If you think the rocks formed at different times. Which layers are the oldest and which are the youngest ? Explain.

The rock layers at the bottom of the formation are the oldest. The rock layers get younger as you go up. Each layer had to form on top of the last one deposited, making each layer younger than the one before.

30

7. What are the principles of relative-age dating?



Unit1 page 17

31

Identify the unconformities in the image below:

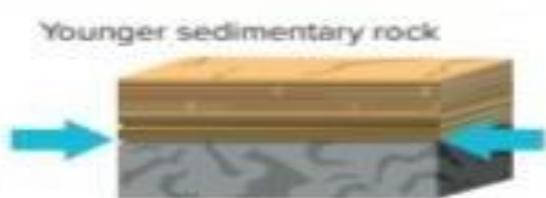
Unit1 page 33



Angular unconformity



Disconformities



Nonconformity

32	<p>Study the original DNA sequence, then name the type of mutations present in A, B, and C.</p> <p>Original DNA sequence</p> <p>A substitution</p> <p>B insertion</p> <p>C Deletion</p>	Unit1 page 71
33	<p>COLLECT EVIDENCE</p> <p>How do adaptations affect organisms, such as orchid plants?</p> <p>A type of orchid plant, called a bee orchid, produces flowers that look like bees. It is called mimicry. Predators see it and are scared away. The orchid plant has more chance to survive and reproduce.</p>	Unit1 page 97
34	<p>2. No two tigers have the same stripe pattern. Such slight differences in inherited traits among individual members of a species occur through mutations. Which term best identifies these differences?</p> <p>A. Mimicry B. Natural selection C. Adaptation D. Variation</p> <p>3. A bat's heart rate can fall dramatically during hibernation. Its breathing rate is also affected, and it may not breathe for an entire hour. Hibernation supports the bat's survival in its environment. What type of adaptation is hibernation?</p> <p>A. Functional B. structural C. behavioral D. none of the above</p> <p>4. Which structural genetic change in the finches can be identified as the one most influenced by feeding habits, as proposed by Charles Darwin?</p> <p>A. ability to fly from island to island to find the food they prefer. b. beak size and shape to take advantage of the food they had. c. claw shapes for perching on limbs while catching insects in their beaks. d. Cooperative behavior so they could share limited seeds and nectar.</p>	Unit1 page 99
35	<p>10. Construct an explanation for how blending in enables an organism to survive in its environment.</p> <p>Blending in allows an organism to be less visible in its environment. This can help it avoid predators or surprise prey.</p>	Unit1 page 96

36



Unit1 page 101

Three friends were working on their history homework together when they noticed that the corn in an image in their textbook looked a lot different than what corn looks like today. Here are their thoughts:

Deidra: I think the corn from the history book is a different species than the corn we eat today.

Jayden: I think that the corn is the same species, but it has changed over time.

Natalia: I think the corn looks different because we grow it differently today. If we grew it the same way, it would look the same.

Circle the student you agree with most. Explain your choice.

Jayden point aligns with the scientific understanding of how species can change over time due to environmental factors and human intervention. It has been selectively bred by humans over thousands of years for desirable traits.

37



THREE-DIMENSIONAL THINKING

Can traits of organisms always be predicted with selective breeding? Explain how multiple **causes** can influence the traits of an organism.

Unit1 page 108

The traits are not always predictable due to mutations. There are environmental and genetic factors as multiple causes that influence an organism's traits.

38

WRITING Connection

Explain how natural selection and artificial selection are related. Include a main idea, supporting details and a concluding sentence.

Natural and artificial selection both refer to a process in which the traits that will be passed from generation to generation are influenced. And both cause changes in populations of organisms.

In artificial selection humans influence which traits will appear in future generations and which will not. For example, when Darwin bred pigeons to produce certain outcomes in the offspring.

In natural selection humans do not influence traits and it happens naturally. For example, the changes in the tortoises observed by Darwin happened naturally.

Unit1 page 114

39



Unit1 page 129

Four friends were comparing their ideas about fossils. This is what they said:

Emma: I think fossils are pieces of dead animals and plants, and tell us little about the animal or plant.

Aidan: I think fossils only come from bones of extinct animals that lived millions of years ago.

Ethan: I think fossils are the evidence of the existence of organisms seen in the remains of bones, shells, or even impressions of rock layers.

Madison: Fossils are the remains of plants and animals that have recently died. Their remains cannot be preserved for very long.

With whom do you agree most? Explain why you agree with that person.

I think fossils are the evidence of the existence of organisms seen in the remains of bones shells or even impressions of rock layer, and that provide important evidence of past life on Earth.

40

ENCOUNTER THE PHENOMENON | How do fossils, such as *Tiktaalik*, provide evidence of evolution?

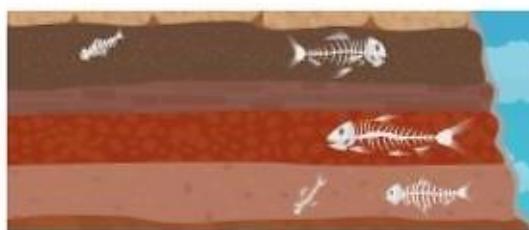
Unit1 page 131

Tiktaalik is considered a transitional fossil. Because it shows characteristics of both fish and tetrapods (four legged animals). This fossil offers evidence of evolution because it resembles both fish and land animals.

41

Use the figure below to answer question 2.

Unit1 page 145



2. What method can scientists use to analyze and interpret when the fossils in the bottom of the figure appeared on Earth?

- A** relative-age dating
- B** trace fossils
- C** mineralization
- D** carbonization

42

3. What pattern can scientists use to interpret the information about the fossils shown in the rock layers?

- Rock layers all contain different sets of fossils.
- Older fossils are located closer to Earth's surface.
- Fossils are younger the closer they are to the surface.
- Each fossil is younger than the rock layer in which it is found.

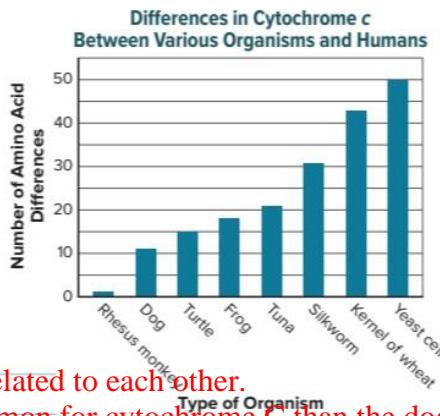
Unit1 page 145

43

Evolving Your Knowledge

Proteins, such as cytochrome c, are made from combinations of 20 amino acids. The graph to the right shows the number of amino acid differences in cytochrome c between humans and other organisms. Use the graph to answer the questions.

1. Which organisms do you think might be more closely related to each other: a dog and a turtle or a dog and a silkworm? Explain your answer.



Unit1 page 157

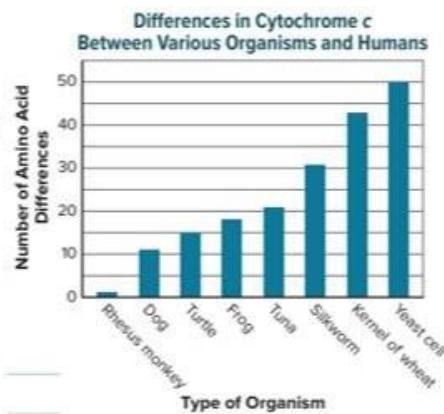
A dog and turtle are more closely related to each other.

They have more amino acid in common for cytochrome C than the dog and a silkworm.

44

Evolving Your Knowledge

Proteins, such as cytochrome c, are made from combinations of 20 amino acids. The graph to the right shows the number of amino acid differences in cytochrome c between humans and other organisms. Use the graph to answer the questions.



Unit1 page 157

2. Which organism has the least differences in the number of amino acids in cytochrome c compared to humans? Which organism has the greatest difference?

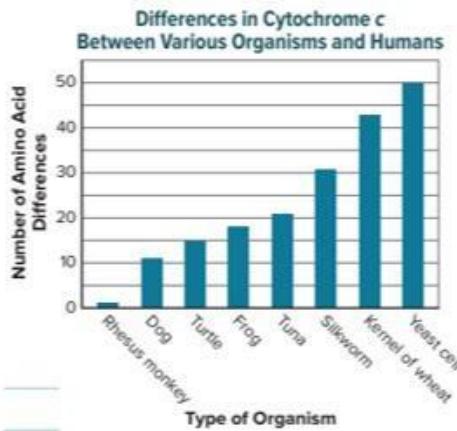
The rhesus monkey has the **least** difference in the number of amino acids in cytochrome c compared to humans.

The yeast cell has the **most** differences in the number of amino acids in cytochrome c compared to humans.

45

Evolving Your Knowledge

Proteins, such as cytochrome c, are made from combinations of 20 amino acids. The graph to the right shows the number of amino acid differences in cytochrome c between humans and other organisms. Use the graph to answer the questions.



Unit1 page 157

3. Notice the number of differences of amino acids in cytochrome c between each organism and humans. How might these differences explain the relatedness of each organism to humans?

Differences accumulate over time, so the more closely related two organisms are, the less time there has been for differences to arise.

46

ENCOUNTER THE PHENOMENON

Imagine you are sitting on a train. How can you describe the position and motion of the train outside the window?



Unit2 page 7

Position can be described using a reference point, a reference direction, and the distance from the reference point in the reference direction.

(The train's relative position is that it's moving parallel to the track on the other side)

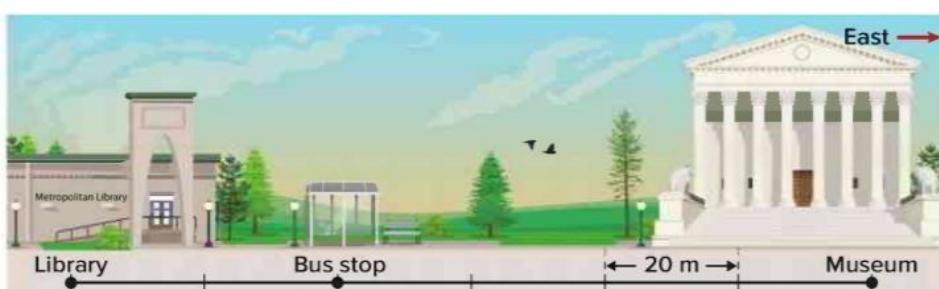
47

The reference point in the image is East.

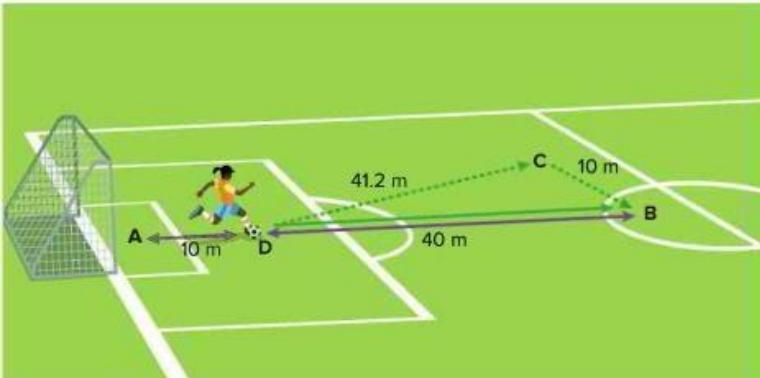
Abdulrahman move from the bus stop to the museum. Has he moved positive or negative to the reference point?

Positive to the reference point +80

Unit2 page 12



48



a. What is the total distance covered by the player from points A to D to C to B?

$$10 + 41.2 + 10 = 61.2 \text{ m}$$

b. What is the magnitude of the displacement of the player from A to B?

$$10 + 40 = 50 \text{ m}$$

49

MATH Connection The motion of a person or object can be explained by examining how the position changes over time. Practice using the mathematical model, the average speed equation.



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2. What is the average speed of a soccer ball that travels 34 m in 2.0 s?

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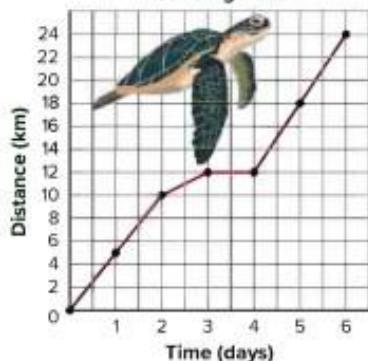
$$130 / 52 = 2.5 \text{ h}$$

50


THREE-DIMENSIONAL THINKING

Analyze the data on the plot below. Determine the speed of the hawksbill sea turtle during each interval listed below.

Hawksbill Sea Turtle
Tracking Data


Unit2 page 29

Day 0 to day 2: 5 km/day

Day 2 to day 3: 2 km/day

Day 3 to day 4: 0 km/day

Day 4 to day 6: 6 km/day

51

MATH Connection In the PhET interactive simulation, a force of 100 N is applied to the wrapped present, giving it an acceleration of 2 m/s^2 . What is the mass of the object?

Unit2 page 44

$$100 / 2 = 50 \text{ kg}$$

What is the acceleration when a force of 2.0 N is applied to a ball that has a mass of 0.60 kg?

$$2 / 0.6 = 3.3 \text{ m/s}^2$$



Good luck!
☺