

Grade 8 – Mock Final Examination

Subject: Science

Term: Term 1, 2025–2026

Duration: 2 hour and 30 minutes

Total Marks: (/100)

MCQs (/60)

FRQs (/40)

Student Information

Name _____

Class/Section _____

Teacher _____

Date _____

Instructions:

1. Read all questions carefully before answering.
 2. Write your answers clearly in the provided spaces.
 3. Use blue or black ink only.
 4. Calculators are **allowed**.
 5. Check your work before submitting your paper.
 6. Ensure your name is written on all answer sheets.
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 **Good luck, and do your best!**

1. When describing the position of an object in two dimensions, which of the following pieces of information are needed?

- A. Only the distance between the object and a reference point
- B. Only the direction the object is facing
- C. A reference point, two directions, and two distances
- D. The time taken for the object to move from one place to another

2. To determine if an object has changed position, you need to know its position relative to another object.

- True
- False

3. Motion can be described through a change in _____.

- A. speed
- B. distance
- C. position
- D. time

4. Distance, a reference point, and a reference _____ are all needed to determine the position of an object.

- A. speed
- B. direction
- C. motion
- D. force

5. Which of the following best describes how position can be used to describe an object like a train?

- A. By using its color, shape, and size
- B. By using a reference point, a reference direction, and the distance from the reference point
- C. By measuring its mass and volume
- D. By recording the time it takes to move

6. How can you use a reference point to help a friend find your location?

- A) Tell them only the name of the place you are at
- B) Use your home as a reference point and share the position, direction, and units you are using
- C) Ask them to guess your position based on landmarks
- D) Describe the weather conditions around you

7. In order to determine an object's location, you need a _____.

- A) time B) reference point C) speed D) displacement

8. The reference direction in the image is East.

If Ahmed walks from the bus stop to the library, which of the following best describes his direction of motion?

- A) Positive direction
- B) Negative direction
- C) Reference point
- D) Stationary position

9. The reference direction in the image is East.

If Suhail runs from the library to the museum, which of the following best describes his direction of motion?

- A) Negative direction
- B) Opposite direction
- C) Positive direction
- D) Reference direction

10. A cyclist travels 60 kilometers in 2 hours. What is their average speed?

- A) 15 km/h
- B) 20 km/h
- C) 30 km/h
- D) 60 km/h

11. A truck driver covers 2,380 kilometers in 28 hours. What is the driver's average speed?

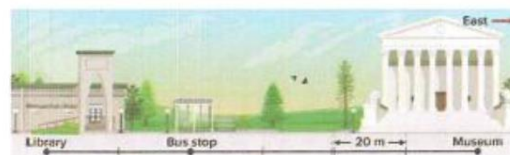
- A) 60 km/h
- B) 75 km/h
- C) 80 km/h
- D) 85 km/h

12. A bus covers a total distance of 40 kilometers in one hour.

What is the **average speed** of the bus?

- a) 10 kilometers per hour
- b) 20 kilometers per hour
- c) 40 kilometers per hour
- d) 80 kilometers per hour

A position is an object's distance and direction from a reference point. The reference direction in the image below is East.



Refer to the reference direction in the image above.

Match each of the following sentences to correctly state the direction using these terms:

positive direction, negative direction, reference point.

Average Speed Equation

$$\text{average speed (in m/s)} = \frac{\text{total distance (in m)}}{\text{total time (in s)}}$$

$$v = \frac{d}{t}$$



$$\text{Average Speed (S)} = \frac{\text{total distance (D)}}{\text{total elapsed time (T)}}$$

$$\text{Elapsed Time (T)} = \frac{\text{total distance (D)}}{\text{speed (S)}}$$

$$\text{Distance (D)} = \text{speed (S)} \cdot \text{time (T)}$$

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

- A) 1 hour
- B) 2 hours
- C) 2.5 hours
- D) 3 hours

14. Isaiah leaves one city at noon to travel 186 km to another city by 3:00 PM. The speed limit is 65 km/h. Can he arrive on time?

- A) Yes, because it will take him less than 3 hours
- B) No, because it will take him about 2 hours
- C) Yes, because it will take him exactly 3 hours
- D) No, because it will take him longer than 3 hours

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

- A) 1.2 m/s²
- B) 2.0 m/s²
- C) 3.3 m/s²
- D) 5.0 m/s²

Acceleration Equation

$$\text{acceleration (in m/s}^2\text{)} = \frac{\text{force (in N)}}{\text{mass (in kg)}}$$
$$a = \frac{F}{m}$$

16. A force of 100 N is applied to a wrapped present, giving it an acceleration of 2 m/s². What is the mass of the object?

- A) 25 kg
- B) 50 kg
- C) 75 kg
- D) 100 kg

Acceleration Equation

$$\text{acceleration (in m/s}^2\text{)} = \frac{\text{force (in N)}}{\text{mass (in kg)}}$$
$$a = \frac{F}{m}$$

17. Acceleration depends on which two factors?

- A) mass and position
- B) net force and mass
- C) mass and velocity
- D) position and net force

18. A train moves with a constant speed down a straight track. Which of the following scientific explanations is true?

- a) No forces are acting on the train as it moves.
- b) No forces are acting against the train as it moves.
- c) The train's engine force balances friction as it moves.
- d) An unbalanced force moves the train.

19. Friction always acts in a direction _____ to the direction of motion.

- A) same
- B) sideways
- C) opposite
- D) downward

20. What is friction?

- A) A force that helps objects move faster on smooth surfaces
- B) A force that resists the sliding motion of two surfaces that are touching
- C) A force that pulls objects toward the center of the Earth
- D) A force that only acts on objects at rest

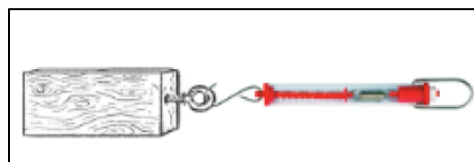
21. According to Newton's Laws, what happens when you push a book across a table and then stop pushing it?

- A) The book keeps moving forever because it has inertia.
- B) The book speeds up because friction increases.
- C) The book slows down and stops because friction acts against its motion.
- D) The book moves faster because the force on it becomes unbalanced.

22. Caleb is investigating the effect of friction on the motion of an object. He uses the following supplies for the investigation.

Which surface created a larger opposing force?

- A) Smooth wood ramp
- B) Carpet
- C) Rough sandpaper
- D) Rough cloth



23. In what ways does Newton's Second Law of Motion describe the stability and change of any system that has forces acting on it?

- A) It shows that objects only move when no forces act on them.
- B) It explains that the acceleration of an object depends on the net force and mass, describing how motion changes when forces are unbalanced.
- C) It states that all objects remain at rest unless energy is added.
- D) It describes how gravity acts equally on all objects.

An object has a force acting on it to the right and has a frictional force to the left as shown below. Use the model below to answer questions 2 and 3.



24. What change in motion will result from the forces modeled?

- A) There will be no change in motion because the forces are in opposite directions.
- B) The object will slow down because of the friction force.
- C) The object will accelerate to the right.
- D) The object will accelerate to the left.

25. What would a model of the net force look like?

- A) The arrow would be to the right at the same length as before, because friction is a different force.
- B) The arrow would be to the right but shorter than before to account for the friction force.
- C) There would be no net force because the two forces are in opposite directions.
- D) The arrow would be to the left because friction is slowing the object down.

26. Lizzie is pushing Alex on a scooter. Lizzie is pushing with 75 N of force to the left, and Alex is helping with 20 N to the left. What is the net force on the scooter?

- A) 95 N, to the right
- B) 95 N, to the left
- C) 55 N, to the right
- D) 55 N, to the left

27. How do multiple forces help explain what happens when you push or pull a water tube?

- A) The water tube moves only if one force acts on it.
- B) The water tube moves in the direction of the strongest unbalanced force.
- C) The water tube stays still no matter how many forces act on it.
- D) The water tube moves in circles because forces act in all directions.

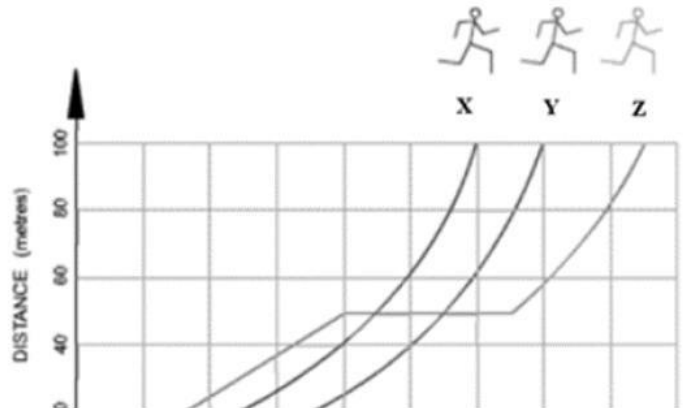
28. You are analyzing a distance-time graph. What features would indicate that an object is moving at a constant speed?

- A) A curved line that changes direction frequently.
- B) A straight line with a constant slope.
- C) A line that gets flatter over time.
- D) A line that stays horizontal.

29. The distance-time graph below shows three athletes X, Y, and Z running a 100-meter race.

Based on the graph, in what order do the athletes finish (1st → 3rd)?

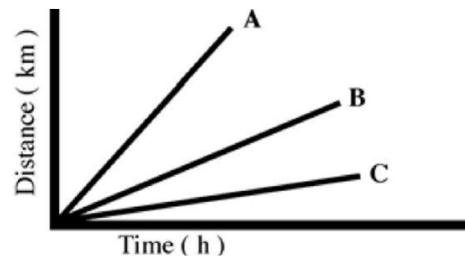
- a) X, Z, Y
- b) **X, Y, Z**
- c) Z, Y, X
- d) Z, X, Y



30. Examine the distance-time graph below.

Which line represents travel at the **fastest speed**?

- A) Line A
- B) Line B
- C) Line C
- D) All lines show the same speed



30. When you divide the force of gravity by an object's mass, what do you find?

- A) The object's velocity
- B) The object's acceleration due to gravity
- C) The object's density
- D) The object's volume

31. What pattern is observed in the ratio between mass and weight?

- A) The ratio increases as mass increases.
- B) The ratio decreases as mass increases.
- C) The ratio stays the same because gravity is constant on Earth.
- D) The ratio changes depending on the object's shape.

32. When the only force acting on a falling object is gravity, what happens?

- A) Heavier objects fall faster than lighter ones.
- B) All objects fall with the same acceleration.
- C) Objects stop accelerating after a few seconds.
- D) Lighter objects fall faster than heavier ones.



33. What is the value of gravitational acceleration near Earth's surface?

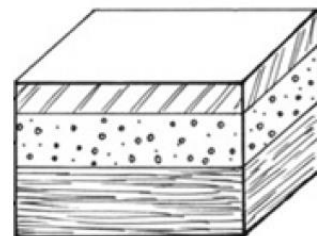
- A) 8.9 m/s^2
- B) 9.8 m/s^2
- C) 10.8 m/s^2
- D) 9.2 m/s^2

34. When studying rock layers in a canyon, how can you tell which layers are the oldest according to geological principles?

- A) The top layers are the oldest because they are exposed to the surface.
- B) The middle layers are the oldest because they are compacted by pressure.
- C) The bottom layers are the oldest because of the Law of Superposition.
- D) All layers are the same age because they formed at the same time.

35. The principle of superposition can be used to determine:

- A) the actual age of these rock layers
- B) the relative densities of these rock layers
- C) the actual temperatures of these rock layers
- D) the relative age of these rock layers

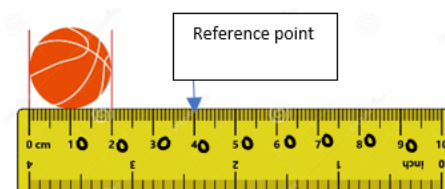


36. Which of the following are principles of relative-age dating?

- A) Law of Superposition, Law of Original Horizontality, and Law of Cross-Cutting Relationships
- B) Law of Magnetism, Law of Density, and Law of Thermodynamics
- C) Law of Constant Motion, Law of Energy Transfer, and Law of Gravity
- D) Law of Conservation of Mass, Law of Inertia, and Law of Uniform Temperature

37. If a ball is placed at the 10 cm mark and your reference point is at the 40 cm mark, what is the ball's position relative to the reference point?

- A) +30 cm
- B) -30 cm
- C) 15 cm
- D) -15 cm



38. If the reference point is placed at the 50-cm mark and an object is placed at the 40-cm mark, what is the object's position relative to the reference point?

- A) +10 cm
- B) -10 cm
- C) +50 cm
- D) -50 cm

39. How can you determine whether an object is moving at a constant speed, and what evidence would support your conclusion?

- A) The object moves different distances in equal time intervals.
- B) The object covers equal distances in equal time intervals.
- C) The object changes direction frequently.
- D) The object's distance decreases as time increases.

40. Which of the following are examples of objects moving at a constant speed?

- A) A car slowing down at a traffic light and then speeding up
- B) A fan spinning at a steady rate and an escalator moving at a steady speed
- C) A ball rolling down a hill and speeding up
- D) A person jogging and stopping to rest

41. Rock layers are correlated if they both contain the same ____.

- A) elements
- B) shapes
- C) fossils
- D) pore spaces

42. A geologist who needed to correlate two rock formations in different areas could match exposed rock layers.

- ☐ True
- ☐ False

43. Index fossils are the remains of species that existed on Earth for relatively short periods of time.

- ☐ True
- ☐ False

44. A sedimentary rock layer is found resting on top of eroded metamorphic rock. What type of unconformity does this represent, and what does it tell us about geological history?

- A) Disconformity – Sedimentary layers were deposited continuously without erosion.
- B) Angular unconformity – Layers were tilted before being eroded and redeposited.
- C) Nonconformity – Erosion occurred before sedimentary layers formed on older metamorphic rock.
- D) Conformity – Rock layers were deposited one after another without any gap in time.

45. Which statement best describes the line or boundary (unconformity) indicated by the arrows in the images of rock layers?

- A) It shows a break in the rock record where erosion or lack of deposition occurred.
- B) It represents a new layer of sediment forming directly over unaltered rock.
- C) It indicates continuous sedimentation without interruption.
- D) It marks the boundary between two identical sedimentary layers.

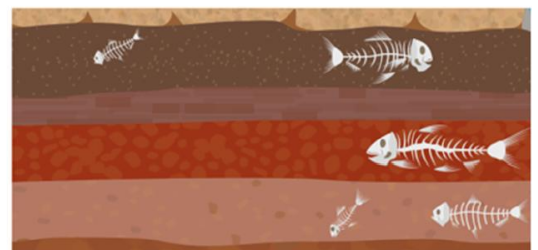


46. What classification of unconformity occurs when sedimentary rock overlies igneous rock?

- A) Disconformity
- B) Nonconformity
- C) Angular unconformity
- D) Conformity

47. A scientist finds many fish fossils in one area as shown in the image below. What does this evidence suggest about the area's past?

- A) That area was once a desert.
- B) That area was once a body of water.
- C) That area is still underwater.
- D) That area had no animals at all.



48. How can fossils found in sedimentary rocks help scientists learn about the environment in which the organisms once lived?

- A) Fossils only show the type of rock that formed, not the environment.
- B) Fossils provide evidence of the climate, habitat, and conditions where organisms once lived.
- C) Fossils tell scientists the exact age of the Earth.
- D) Fossils show that all organisms lived in the same environment.

49. How are fossils useful in understanding Earth's history and in the development of the geologic time scale?

- A) Fossils show that all rocks formed at the same time.
- B) Fossils provide evidence of past life and help scientists divide Earth's history into different time periods.
- C) Fossils tell scientists how mountains are formed.
- D) Fossils only show the locations of volcanoes.

50. A 10 kg object is resting on a flat surface. How would you calculate its weight?

- A) Multiply its mass by 100.
- B) Divide its mass by gravity.
- C) Multiply its mass by the acceleration due to gravity (9.8 m/s²).
- D) Subtract its mass from gravity.

Weight Equation

$$\text{weight (N)} = \text{mass (kg)} \times \text{gravitational acceleration (m/s}^2\text{)}$$
$$W = mg$$

51. A book with a mass of 2 kg is at rest on top of a desk. What is the weight of the book?

- A) 19.6 N
- B) 4.9 N
- C) 9.8 N
- D) 2 N

Weight Equation

$$\text{weight (N)} = \text{mass (kg)} \times \text{gravitational acceleration (m/s}^2\text{)}$$
$$W = mg$$

52. A driver needs to make a delivery to an office that is 30 km away. The driver has traveled for 45 minutes west down a straight road at 50 km/h. Has the driver traveled far enough to reach the office?

- A) No, the driver has only traveled 15 km.
- B) Yes, the driver has traveled exactly 30 km.
- C) Yes, the driver has traveled 37.5 km, which is more than enough to reach the office.
- D) No, the driver has traveled less than 25 km.

Average Speed Equation

$$\text{average speed (in m/s)} = \frac{\text{total distance (in m)}}{\text{total time (in s)}}$$
$$\bar{v} = \frac{d}{t}$$

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

- A) 1 hour
- B) 2.5 hours
- C) 3 hours
- D) 4 hours

Average Speed Equation

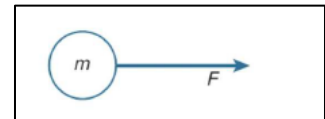
$$\text{average speed (in m/s)} = \frac{\text{total distance (in m)}}{\text{total time (in s)}}$$
$$\bar{v} = \frac{d}{t}$$

54. If you push against a wall with a force of 60 N and the wall doesn't move, what can you infer about the force the wall exerts on you?

- A) The wall exerts no force on you.
- B) The wall exerts a smaller force than 60 N.
- C) The wall exerts an equal and opposite force of 60 N on you.
- D) The wall exerts a larger force than 60 N on you.

55. A person is applying a force to the right on an object as shown. What forces are acting on the person?

- A) A slightly smaller force to the left because the object is accelerating
- B) A force equal to the force applied, going to the left
- C) A force to the right to apply the force to the object
- D) A force to the right because the object is accelerating



56. What is the nature of gravitational force, and how does it act between two objects in space?

- A) Gravitational force pushes objects away from each other in space.
- B) Gravitational force only acts when objects touch each other.
- C) Gravitational force attracts all objects with mass toward each other, no matter the distance.
- D) Gravitational force acts only on planets that have atmospheres.

57. If the mass of one of two spheres increases, how does it affect the gravity between the two spheres?

- A) The gravity increases.
- B) The gravity decreases.
- C) The gravity fluctuates.
- D) The gravity is not affected.

58. Gravitational force differs based on two things. It increases with increasing _____ and decreases with increasing _____.

- A) Distance; mass
- B) Mass; distance
- C) Volume; speed
- D) Size; density

59. A train moves at a constant speed down a straight track. Which of the following scientific explanations is true?

- A) No forces act on the train as it moves.
- B) The train moves because no forces are acting against it.
- C) The forces of the train's engine balance the force of friction opposing it.
- D) An unbalanced force keeps the train moving.

60. When using a balance scale with different weights on each side, what can you conclude if the scale is balanced?

- A) The forces acting on each side are unbalanced.
- B) The forces acting on each side are equal.
- C) One side has more force than the other.
- D) The heavier object exerts less force.

61. When a person sits on a bench, how do the forces between the person and the bench demonstrate Newton's third law of motion?

- A) The person exerts a downward force on the bench, and the bench exerts an equal upward force on the person.
- B) The person pushes down harder than the bench pushes up.
- C) The bench exerts no force on the person.
- D) The person's force and the bench's force cancel each other completely.

62. Which of the following systems does NOT represent a force pair?

- A) When you push on a bike's brakes, the friction between the tires and the road increases.
- B) When a diver jumps off a diving board, the board pushes the diver up.
- C) When an ice skater pushes off a wall, the wall pushes the skater off the wall.
- D) When a boy pulls a wagon, the wagon pulls back on the boy.

63. The image below shows a car crashing into a pole. The car comes to a complete stop. The average force exerted by the car on the pole is 7,000 N to the left. What is the average force exerted by the pole on the car?

- A) The pole exerts an average force of 7,000 N to the right.
- B) The pole exerts an average force of 7,000 N to the left.
- C) The pole exerts an average force of 3,500 N to the left.
- D) The pole exerts an average force of 3,500 N to the right.



Image Source : <https://www.pexels.com/photo/>

*****END OF MCQS*****

FRQS

- 1) A position is an object's distance and direction from a reference point. The reference direction in the image below is East.

Refer to the reference direction in the image above.
Match each of the following sentences to correctly state the direction using these terms:
positive direction, negative direction, reference point.

- a) Ahmed walks from the bus stop to the library.

.....

- b) Suhail runs from the library to the museum.

.....

- 2) The image below shows the position of a player as he runs from point D to point C and then to point B.

Study the image and answer the questions that follow.

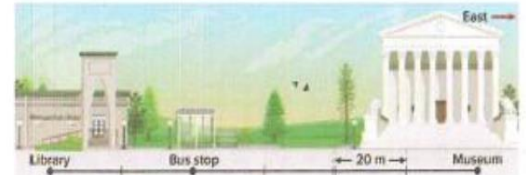
- a) What is the total distance covered by the player?

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- b) What is the magnitude of the displacement of the player from positions D to B?

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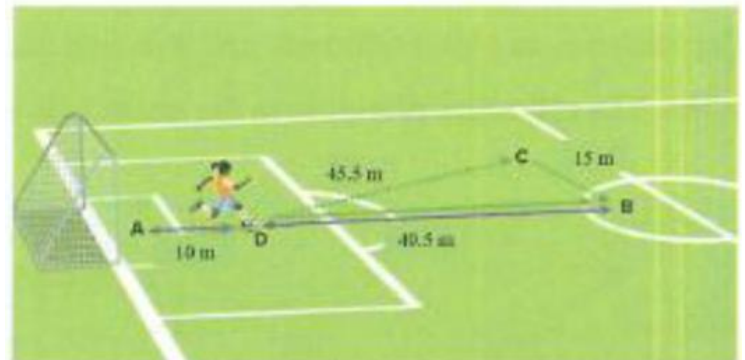
A position is an object's distance and direction from a reference point. The reference direction in the image below is East.



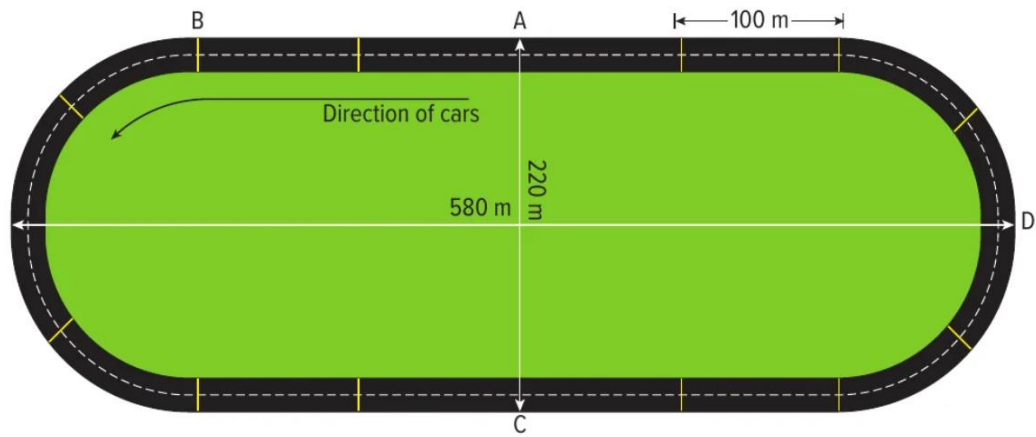
Refer to the reference direction in the image above.

Match each of the following sentences to correctly state the direction using these terms:

positive direction, negative direction, reference point.



- 3) Use the race track model below to determine the distance traveled and the displacement of a car from point A to point D when it reached point D on the first lap.



Distance	Displacement

- 4) Compare between Distance and Displacement :

Distance is

.....
.....

Displacement is

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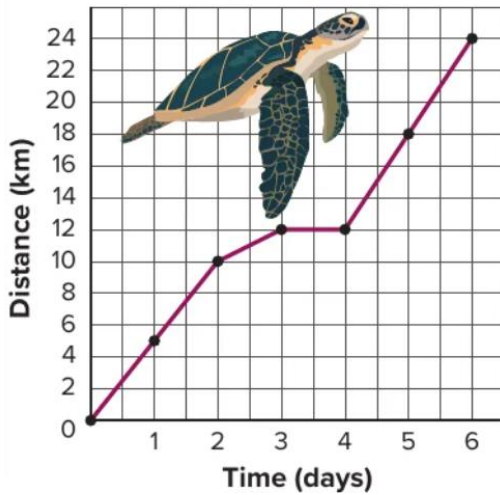
- 5) Isaiah leaves one city at noon to travel 186 km to another city by 3:00 PM. The speed limit is 65 km/h. Can he arrive on time?

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- 6) What happens to an object's displacement if it returns to its starting point?

.....

Hawksbill Sea Turtle Tracking Data



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

Day 0 to day 2: _____

Day 2 to day 3: _____

Day 3 to day 4: _____

Day 4 to day 6: _____

8) How can motion be described from different observers' points of view?

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9) How does changing the reference point affect how we describe an object's position?

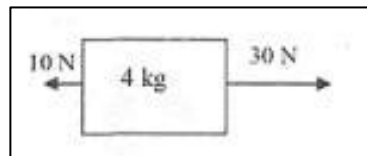
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10) Why is position considered relative in physics ?

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.....

11) A force is a push or pull. Forces can change the motion of an object.

Study the image below:



i. Calculate the net force acting on the block.

.....
.....
.....

ii. Given that:

Acceleration Equation:

Acceleration Equation

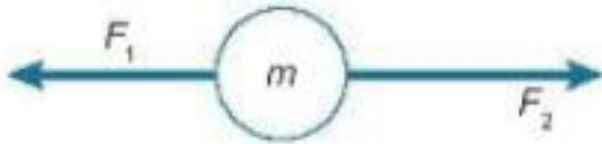
$$\text{acceleration (in m/s}^2\text{)} = \frac{\text{force (in N)}}{\text{mass (in kg)}}$$

$$a = \frac{F}{m}$$

Calculate the acceleration of the block.

.....
.....
.....

12) To model an object with multiple forces, simply add one arrow to the circle in the direction of each force as shown below.



In the free-body diagram above, the force to the left (F_1) is less than the force to the right (F_2). Which direction do you think the object will begin to move?

.....
.....

13) In what ways does Newton's second law of motion describe stability and change of any system that has forces acting on it?

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14) How does Newton's First Law explain the motion of an object when no force is applied?

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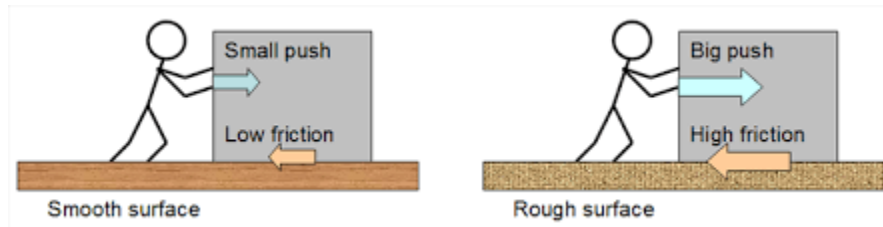
15) How do you determine the net force acting on an object when multiple forces are involved?

.....
.....

16) If you cause the surfaces between two touching objects to change, how will the friction be affected? Make a claim. Support your explanation with evidence and logical connections.

17) During the Friction Experiment

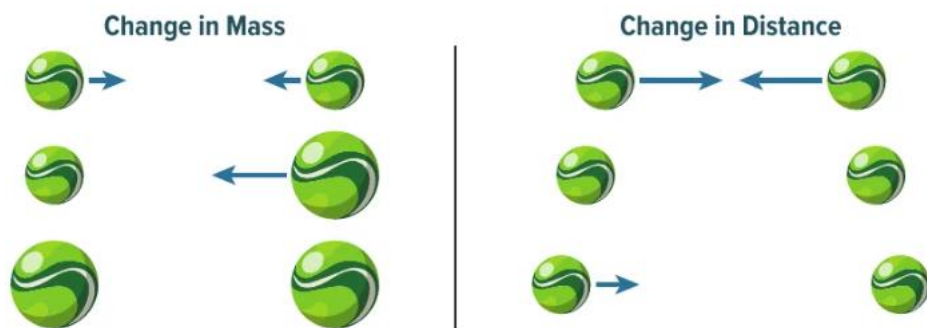
- a) Compare the forces required to pull the block across the two surfaces (Rough and smooth).



- b) How did changing the surface affect the motion of the block?

- c) Which surface created a larger opposing force? Explain.

18) On the figure below, add arrows to model the size and direction of the force of gravity for the missing forces in each system below.

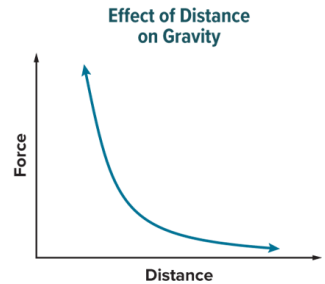


19) How does the mass of an object affect the gravitational force it experiences?

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20) How does the distance between two objects influence the gravitational pull between them?



.....

.....

21) Why do larger celestial bodies exert stronger gravitational forces?

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.....

22) How can we compare gravitational forces acting on different planets at equal distances?

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.....

23) What happens to the gravitational force when the distance between two objects increases or decreases?

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24) Calculate the weight of an object on **earth** using its mass 5Kg and gravitational acceleration?

$$\text{Weight} = \text{Mass} \times \text{gravitational Acceleration}$$

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25) Why is the gravitational force between small objects difficult to observe?

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26) Study the image:

Sedimentary Rock Layers

A.

(i) Which is the oldest rock layer?

Indicate by choosing a number between 1–4

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(ii) Explain your answer.

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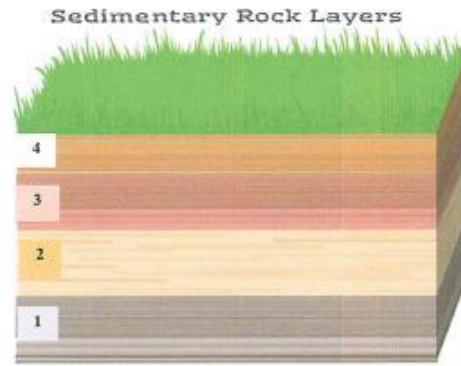
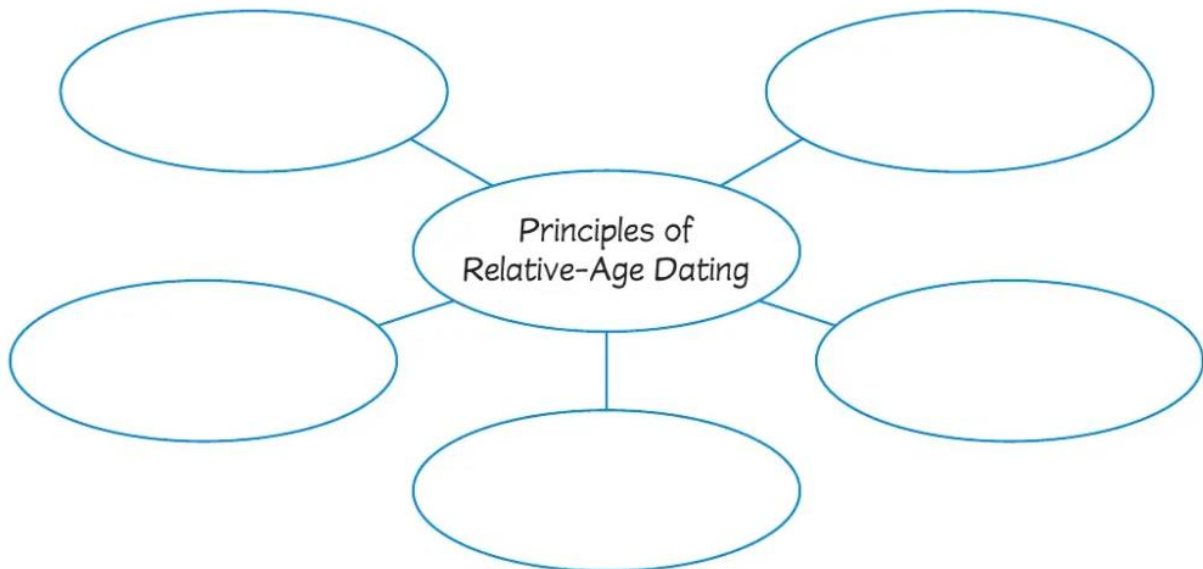


Image Source: Inspire Science Grade 8 General Textbook

27) What are the Relative-age principles:

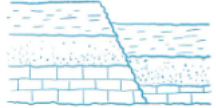


28) How can the position of fossils in rock layers help determine their relative age?

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29) How does the presence of faults affect the interpretation of rock layer ages?



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30) What does the principle of original horizontality tell us about sedimentary layers?

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31) How can inclusions in rocks help determine which layer is older?

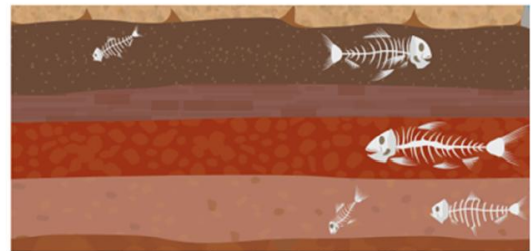
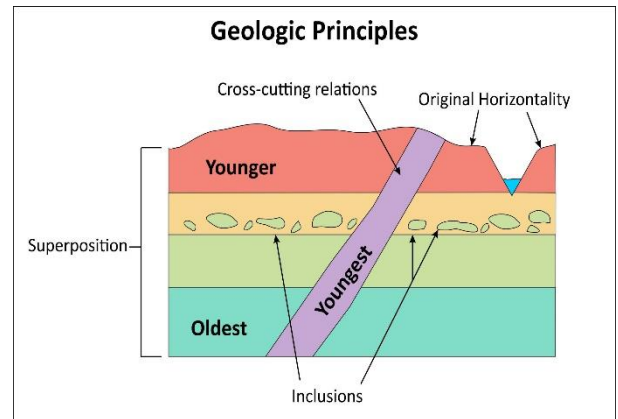
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What does the discovery of marine fossils in mountain rocks tell us about Earth's past environments?

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32) What scientific idea explains that natural processes observed today also occurred in the past?

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33) How does fossil evidence support the idea that Earth's surface changes over time?

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