8

DepED
DEPARTMENT OF EDUCATION

Learning Activity Sheet for Science

Quarter 4
Lesson
3

Learning Activity Sheet for Science Grade 8
Quarter 4: Lesson 3 of 8 (Week 3)
SY 2025-2026

Development Team

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LEARNING ACTIVITY SHEET

Learning Area:	Science 8	**Quarter:**	4th Quarter
Lesson No.:	3	**Date:**	
Lesson Title/ Topic:	**Uniform Circular Motion**		
Name:		**Grade & Section:**	

I. Activity No. 3.1: Uniformly Accelerated Motion (10 minutes)

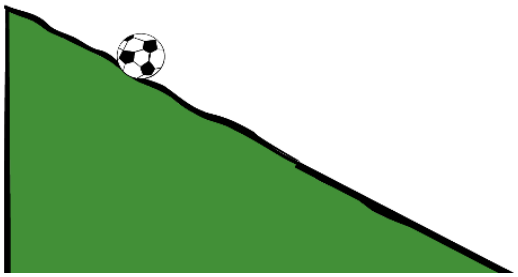
II. Objective(s): At the end of the activity, the learners should be able to identify objects or events that exhibit uniformly accelerated motion.

III. Materials Needed: Paper and Pencil

IV. Instructions:

Identify whether the given scenarios exhibit uniformly accelerated motion or not.

1. A ball rolling down a slope



Digital Image: https://studia.app/b-soccerballhill/

2. A skydiver jumping out of a plane

Digital Image: https://www.freepik.com/free-vector/male-skydiver-freefall-sky-with-airplane-background_43103620.htm

3. A car slowing down and increasing speed again

Digital Image: https://www.freepik.com/free-vector/red-car-drive-road-scene_17563959.htm

4. A bicycle engaging its brakes and steadily slowing down

Digital Image: https://www.freepik.com/free-vector/female-cyclist-seascape_25590428.htm

Guide questions:

1. When can we say that an object is accelerating?

   _____
   _____
   _____
   _____
   _____

2. When can we say that an object is exhibiting uniformly accelerated motion?

   _____
   _____
   _____
   _____
   _____

3. Among the example situations, which of them exhibits uniform acceleration, and which do not?

   _____
   _____
   _____
   _____
   _____

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I. Activity No. 3.2: I Know a Circular Motion When I See One (10 minutes)

II. Objective(s): At the end of the activity, the learners should be able to identify scenarios or examples where uniform circular motion is observed.

III. Materials Needed: Pen and paper

IV. Instructions:

Observe the following pictures and answer the questions that follow.

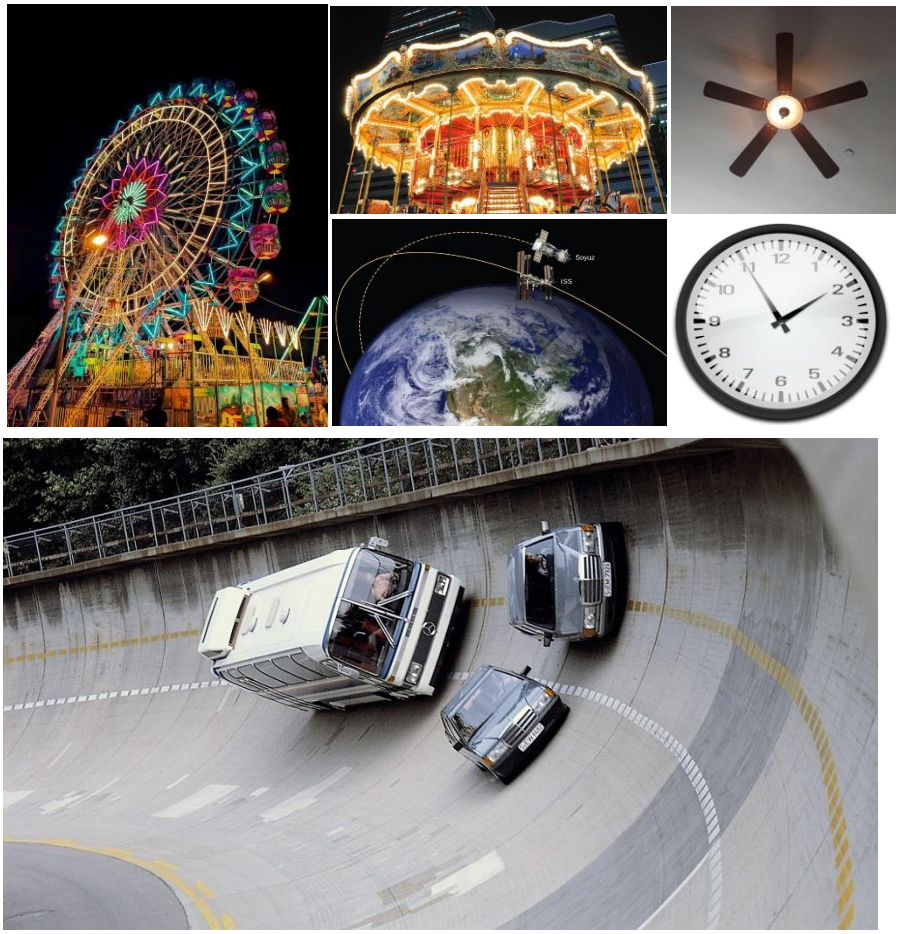

Image sources:
https://publicdomainvectors.org/en/free-clipart/Analog-clock/49442.html
https://group.mercedes-benz.com/company/tradition/museums-historical-sites/50-jahre-einfahrbahn-untertuerkheimspecial-topic-article.html
https://commons.wikimedia.org/wiki/File:Japan_carousel.jpg
https://commons.wikimedia.org/wiki/File:CNX_UPhysics_13_04_SoyusISS.jpg
https://www.pexels.com/photo/ferris-wheel-at-night-time-11407025/
https://commons.wikimedia.org/wiki/File:Modern_ceiling_fan.jpg

Guide Questions:

1. Describe the motion of the objects shown in the picture.

   _____
   _____
   _____
   _____
   _____

2. Relating them to our previous lesson about uniformly accelerated motion, can these objects or phenomena exhibit uniform acceleration? Explain your answer.

   _____
   _____
   _____
   _____
   _____

3. What do you think is keeping these objects in motion?

   _____
   _____
   _____
   _____
   _____

4. Give three (3) more examples of scenarios or events exhibiting uniform circular motion.

   _____
   _____
   _____
   _____
   _____

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I. Activity No. 3.3: Cross Word Puzzle (10 minutes)

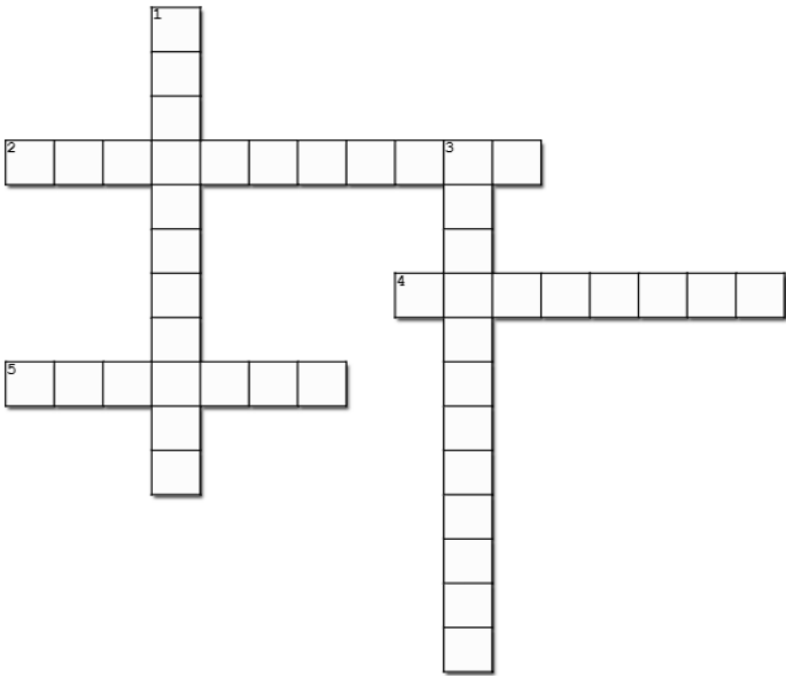
II. Objective(s): At the end of the activity, the learners should be able to define vocabulary words in the lesson about uniform circular motion.

III. Materials Needed:

Pen and paper

IV. Instructions:

Solve the crossword puzzle. Read first the clues and provide the boxes with letters to complete the words being asked.



ACROSS

2. moving or tending to move toward the center
4. a vector quantity that has a direction and magnitude, which is speed
5. a straight line that touches a curve or curved surface at a single point, but if extended does not cross it at that point

DOWN

1. moving or tending to move away from the center
3. change in speed or change in direction or both

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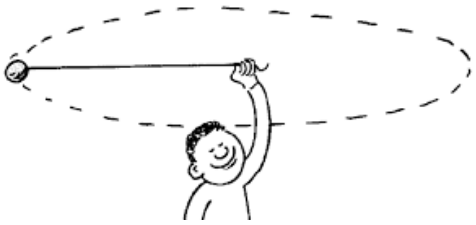
I. Activity No. 3.4: Describing Uniform Circular Motion (25 minutes)

II. Objective(s): At the end of the activity, the learners should be able to describe the directions of the tangential speed, centripetal force, and centripetal acceleration.

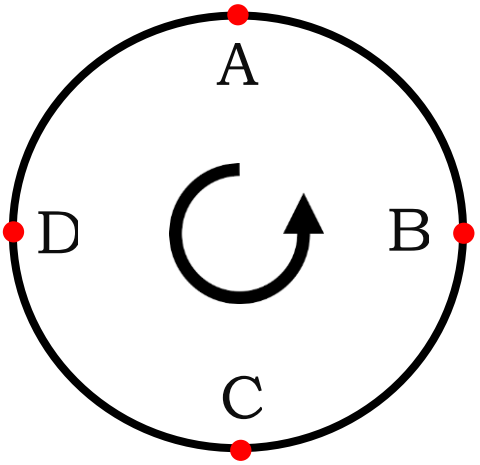


https://examanalysis.in/circular-motion/?i=1

III. Materials Needed: String, ruler, scissors, and bolt, rock, bob, old 5-centavo coin, or any small, weighted object

IV. Instructions:

1. Cut a piece of string to a length of 0.50 meters.
2. Securely attach the weighted object (bolt, rock, coin, etc.) to one end of the string.
3. Twirl the object in a counterclockwise direction.
4. At specific points (A, B, C, and D) on the circular path, release the string.
5. Observe and record the direction in which the object travels after being released by drawing an arrow from the release point on a diagram of the circular path.
6. Repeat the process for points B, C, and D.



Guide Questions:

1. At each point (A, B, C, D), where is the velocity vector directed? Draw an arrow from each point on the circular path to show the direction of the object's velocity.

_____

_____

_____

_____

2. Why does the object follow a circular path?

_____
_____
_____
_____

3. Is there a force acting on the object due to the string? If so, what is the direction of this force?

_____
_____
_____
_____

4. Describe the magnitude and direction of the object's velocity.

_____
_____
_____
_____

5. Does the object in uniform circular motion exhibit uniform acceleration? Explain how this occurs.

_____
_____
_____
_____

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Lesson Title/ Topic:	Uniform Accelerated Motion		
Name:		**Grade & Section:**	

I. Activity No. 3.5: Problem-solving about Uniform Circular Motion (25minutes)

II. Objective(s): At the end of this activity, the learners should be able to calculate centripetal acceleration and centripetal force in problems involving uniform circular motion.

III. Materials Needed: Pen and paper

IV. Instructions:
Solve the problems below. Write the given values, unknown, formulas, and your solution in the space provided.

1. Determine the centripetal acceleration of a 1000-kg race car moving at 15 m/s along a curve racetrack of radius 50 m. Calculate its centripetal acceleration when the radius is 100 m.

Given	
Required	
Formula	
Solution	
Answer	

2. Julio attached a 0.10-kg mass to a string 0.5-m long and swings it in a horizontal circle. The ball goes around its path at 4 m/s. What is the centripetal force on the object?

Given	
Required	
Formula	
Solution	
Answer	

Rubric:

Excellent (4)	Correct given values, unknown, and formula to use are identified; Correct and complete solution is shown; Correct final answer is given. (5 points)
Proficient (3)	Given values, unknown, and formula to use are identified but one of these is incorrect; Correct and complete solution is shown; Correct final answer is given. (4 points)
Satisfactory (2)	Incomplete given values, unknown, and formula to use are identified; Correct solution is shown; Correct final answer is given; Some units are lacking or incorrect. (3 points)
Developing (1)	Incomplete given values, unknown, and formula to use are identified; Incorrect solution is shown; Incorrect final answer is given; Some units are lacking or incorrect. (2 points)
Beginning (0)	No attempt to answer (0 points)

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I. **Activity No. 3.6: Real-Life Applications of Uniform Circular Motion: Problem Solving Mania (30 minutes)**

II. **Objective(s):** At the end of this activity, the learners should be able to calculate centripetal acceleration and centripetal force in problems involving uniform circular motion.

III. **Materials Needed:** Pen and Paper

IV. **Instructions:**

Solve the problems below. Write the given values, unknown, formulas, and your solution in the space provided.

1. Racing on a flat track, a car moving 30 m/s rounds a curve with a radius of 50 m. What is the centripetal acceleration of the car?

Digital Image:
https://commons.wikimedia.org/wiki/File:ALMS_Prototypes.jpg

Given	
Required	
Formula	
Solution	
Answer	

2. A 50-kg runner moving at a speed of 8 m/s rounds a curve road with a radius of 24 m. Find the centripetal force needed to accelerate the runner.

Given	
Required	
Formula	
Solution	
Answer	

Rubric:

Excellent (4)	Correct given values, unknown, and formula to use are identified; Correct and complete solution is shown; Correct final answer is given. (5 points)
Proficient (3)	Given values, unknown, and formula to use are identified but one of these is incorrect; Correct and complete solution is shown; Correct final answer is given. (4 points)
Satisfactory (2)	Incomplete given values, unknown, and formula to use are identified; Correct solution is shown; Correct final answer is given; Some units are lacking or incorrect. (3 points)
Developing (1)	Incomplete given values, unknown, and formula to use are identified; Incorrect solution is shown; Incorrect final answer is given; Some units are lacking or incorrect. (2 points)
Beginning (0)	No attempt to answer (0 points)

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I. Activity No.3.7: Understanding Check (10 minutes)

II. Objective(s): At the end of the activity, the learners should be able to describe uniform circular motion.

III. Materials Needed: Pen and Paper

IV. Instructions:

Recall what you have learned about uniform circular motion. Answer the following questions:

1. When can we say that an object is moving in a uniform circular motion?

   _____
   _____
   _____
   _____

2. What can you say about the direction of the velocity vector of objects in uniform circular motion? How about the direction of Centripetal acceleration? Centripetal force?

   _____
   _____
   _____
   _____

3. Give 1 example of objects exhibiting circular motion.

   _____
   _____
   _____
   _____