

JANUARY

Makugihon

FEBRUARY

Makigugmaon

MARCH

Matinabangon

APRIL

Matinahuron

MAY

Makapay og Malimpyo

JUNE

*Maabtik og Masunod sa
Oksaklong Oras*

JULY

Maantigo og Maabilidad

AUGUST

*Maginhuhunaon
para sa Uban*

SEPTEMBER

Madaginaton

OCTOBER

Matinad-anon

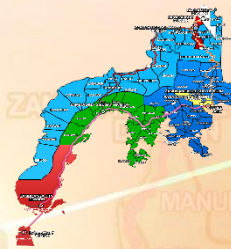
NOVEMBER

Masaligan

DECEMBER

Maalampon

Republic of the Philippines
Department of Education
 Regional Office IX, Zamboanga Peninsula


6


Zest for *P*rogress
 Zeal of *P*artnership

Mathematics

Quarter 3 - Module 5:
 Calculates Speed, Distance and Time



Name of Learner: _____

Grade & Section: _____

Name of School: _____



What I Need to Know

The module contains only one lesson:

Lesson 5 – Calculating Speed, Distance and Time

After going through this module, you are expected to:

1. Calculate speed, distance and time.
2. Solve problems involving average rate and speed.



What I Know

Activity 1. Find out how far you have known speed, distance, and time. All you have to do is to read and analyze the text.

BSP Troop leaders John, Joseph and James are racing for an athletic badge in hilly terrain with a distance of 2500 meters trail route from starting to finish line. Troop leader John chooses a trail route where he could double the acceleration rate of his bike to 10 meters per second, from the initial acceleration rate of 5 m/s, going down so he could be able to reach the finish line, first. While, Joseph and James are steadily driving in a flat trail with a speed of 3 meters per second.

The race started at exact 8:00 in the morning and they are expected to finish the race in a minimum time. Unfortunately, Troop leader James fell off his bike and got a scraped knee. Immediately, Troop leader Joseph saved troop leader James and apply his knowledge in first aid, wound dressing and safety.

It took them 30 minutes to reach the finish line. Although, troop leader Joseph and James didn't win the race to get the athletic badge, they are still positive and optimistic in the end.

Unaware of the merit badge, troop leader James received an award for not giving up. While, troop leader Joseph received 2 merit badges, one for saving life and the other is for applying first aid to troop leader James.

Comprehension Check

Directions: Read the questions carefully. Encircle the letter of the correct answer.

1. Who are racing in a hilly terrain?
A. John, James and Joseph C. John and Jim and Josep
B. John, Jams and Jacob D. John, Joseph and Jimmy

2. Who do you think will win the race and why?

- A. Joseph will win the race because he is more determined
- B. James will win the race because he is motivated to win.
- C. John will win the race because he chose a trail route that will double his acceleration rate.
- D. Joseph and James will win the race because their speed is consistent.

3. What inference can be drawn to troop leader John's choice of trail route?

- A. Troop Leader John wants to be alone and ride freely.
- B. Troop Leader John strategized the race to win by estimating time, distance and speed.
- C. Troop leader John wants extreme bike racing
- D. Troop leaders John likes a different trail route for a change.

4. What is Troop leaders John and Joseph's distance given the speed of 3m/s in 1 minute?
Calculate.

- | | |
|---------------|---------------|
| A. 140 meters | C. 100 meters |
| B. 160 meters | D. 180 meters |

5. What time will Troop leaders Joseph and James finish the race? Given the distance of 2,500.meters and a speed of 3m/s . Calculate.

- | | |
|--------------------------------|--------------------------------|
| A. 13 minutes and 53.4 seconds | C. 12 minutes and 13.4 seconds |
| B. 15 minutes and 33.2 seconds | D. 14.4 minutes and 12 seconds |

6. If troop leader John's speed rate will be five times the initial rate of 5m/s. What is his speed?

- | | |
|-----------|----------|
| A. 20m/s | C. 25m/s |
| B. 30 m/s | D. 50m/s |

7. If troop leaders Joseph and James speed rate spikes up to 12 m/s, What outcome could you predict in their race?

- A. John will still win the race because his speed is doubled
- B. Joseph and James will win the race because their speed rate is faster than John
- C. Joseph and James will lose the race because John's speed is steady.
- D. John will win the race because he is fast.

8. If you are with them racing, would you let your speed steady? and why?

- A. Yes, because the speed is enough.
- B. Yes, because I don't want to win.
- C. No because, I want to win. It is a race, I will accelerate my speed.
- D. No, because, I want to finish the race immediately and go home.

9. If you were John, would you estimate time, distance and speed to win a race? and why?
- A. Yes, because that will be my advantage to win
 - B. Yes, because I want to reach the finish line, know when to arrive, speed up and calculate distance.
 - C. No, because it has nothing to do with winning
 - D. Yes, because it has nothing to do with winning
10. What **BEST** the states the importance of calculating speed to distance and time to you?
- A. It helps me estimate my time.
 - B. It helps me choose which transportation to ride.
 - C. It helps me decide which way to go.
 - D. It helps me estimate my time, arrival and departure.



What's In

Activity 2: Let's do this!

Take a look at the table and observe the data.

Runner's Name	Runner's Speed	Distance to finish line
1. Maria	10m/s	15m
2. Andres	5m/s	10m
3. Jose	9m/s	3m
4. Ramon	7m/s	5m
5. Carlito	8m/s	8m

Directions: Encircle the letter of the correct answer.

1. Who will reach the finish line first? _____
 A. Maria B. Andres C. Jose D. Ramon
2. Who will finish the race last? _____
 A. Maria B. Andres C. Jose D. Ramon
3. How far is the distance between Maria and Jose?
 A. 12 meters B. 10 meters C. 11 meters D. 13 meters
4. What relationship can you infer to a runner's speed and distance?
 A. The faster the speed, the shorter the time to reach a specific point.
 B. The faster the speed, the longer the time to reach a specific point
 C. The faster the speed, the longer the time and distance
 D. The faster the speed, the shorter the distance and time.
5. How long will it take Andres to reach the finish line?
 A. 2 seconds B. 2 minutes C. 2 hours D. 2.1 seconds



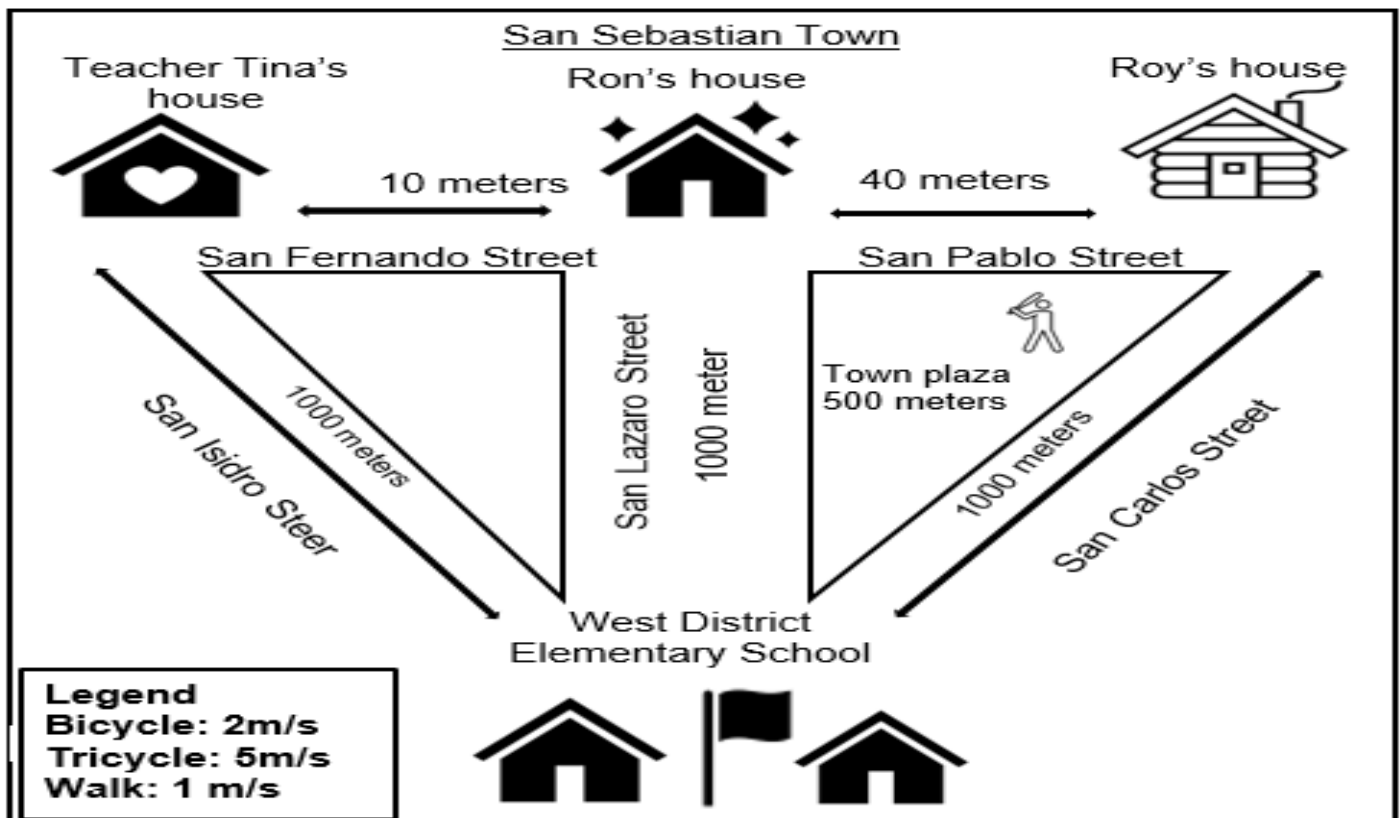
What's New

Read the selection below.

Ron and Roy are best buddies. They are both achievers in academic and sports they are also trusted grade 6 pupils of teacher Tina S. Marasigan at West District Elementary School. Every day, they do their daily routines at home, community and school, because for them, time is precious and they are both time conscious that is why they are used of working their tasks daily and accomplishing them early.

At 7:00 in the morning, Ron and Roy leave their homes and fetches teacher Tina's books and learner's learning materials. They walk 10 meters from Ron's house while Roy had to ride his bicycle 40 meters from his house to Ron's house. At 7: 02 a.m., they will leave teacher Tina's house riding a tricycle heading to a 1 kilometer school distance from teacher Tina's house. After their class, at 4:00 p.m., they go to town's plaza and play their favorite game, basketball, for an hour before they head to Roy's house. Ron had to ride his bike again back home at the end of the day. Everyday, they made sure to accomplish their daily routines and value time.

Look at the Illustration. Study and analyze the location, distance, and legend.



Activity: 3

Read and analyze each question. Encircle the letter of the correct answer.

1. Who are the two best buddies?
A. Carlos and Ron B. Ron and Roy C. Roy and Pablo D. Roy and Lorenzo
2. Who rides a 40-meter distance using a bike?
A. Ron B. Roy C. Pablo D. Isidro
3. Whose house is nearest to teacher Tina?
A. Ron B. Roy C. Lorenzo D. Pablo
4. How many meters will be the travel if they will start at Ron's house, passing to teacher Tina's house to school?
A. 1000 meters B. 1005 meters C. 1010 meters D. 1120 meters
5. How much time will it takes Ron if he walks from his house to school, passing San Carlos Street?
A. 1040 seconds B. 2040 seconds C. 3040 seconds D. 4050 seconds
6. How much time will it takes Ron and Roy to walk teacher Tina's house?
A. 10 seconds B. 15 seconds C. 20 seconds D. 11 seconds
7. If you will travel from Ron's house passing to San Isidro street riding a bicycle, how much time will it take you to reach the school?
A. 500 seconds B. 505 seconds C. 510 seconds D. 1010 seconds
8. If Ron and Roy travels a distance of 1010 meters given a time of 100 seconds, what is their average speed?
A. 10.1 m/s B. 11.1m/s C. 10.11m/s D. 11.10m/s
9. If you will walk the town's plaza from Roy's house. Which street would you choose. Why?
A. I will choose to walk from San Pablo Street to San Lazaro Street, because, it has shorter distance.
B. I will choose to walk from San Pablo Street to San Fernando and ride a tricycle to town's plaza.
C. I will choose to walk from San Pablo Street to San Carlos Street because it has a better route.
D. I will choose to walk from San Pablo Street to San Lorenzo Street because the people there are nice.
10. How will you know if a place is far from you or near from you?
A. Estimate the distance, time and travel speed.
B. Estimate the time of arrival and departure
C. Estimate the speed.
D. Estimate the distance of a place.



What Is It

Sir Isaac Newton is an English mathematician and a natural philosopher discovered laws of motion related to speed, distance and time. His discoveries pave the way to humankind to achieve and accomplish greater things. One of his famous laws of motion is the law of inertia that states, if an object is at rest, it stays in its motion, an object in motion stays in motion at its constant speed and direction unless, acted upon an unbalanced force.

In relation to speed, distance and time. If an object is heavy the inertia is large, which means if the object moves. It accelerates and results to an average speed, specific distance and time.

Example, a dog running 50 meters in 8 second has enough inertia to move in its direction and reach a desired point fast enough due to the amount of inertia in its body.

In speed distance and time, if we calculate the average speed of a dog. We will use the formula of **(S=D/T)** where S stands for speed, equals to D or distance divided to a given time.

$$\text{Average speed} = \frac{\text{Distance}}{\text{Time}} = \frac{50 \text{ meters}}{8 \text{ seconds}} = 6.25 \text{ m/s}$$

Average speed is a measure of the distance traveled in a given period of time; it is sometimes referred to as the ratio of distance and time.

Speed is a scalar quantity that refers to how fast or slow an object is moving.

Another relevant idea to speed, distance and time is Newton's third law of motion that states, "In every action there is an equal and opposite reaction." This connects the idea of distance = Time/Speed and Time = to Speed X Distance.

Which means, if the initial action is the object moving and accelerating, the reaction will result to a shortened time and distance.

Example, Roy's bicycle can run 983 meters an hour, if he drives 5 hours, how far will go?

To calculate the distance, we will use the formula

(D = Speed X Time)

$$\begin{aligned} \text{Distance} &= \text{Speed} \times \text{Time} \\ &= 983 \text{ meters} \times 5 \text{ hours} \\ &= \underline{4,915 \text{ meters}} \text{ or } \underline{4 \text{ kilometers and } 915 \text{ meters}} \end{aligned}$$

Distance is the total length between two points or position.

If we will calculate time, we will use the formula.

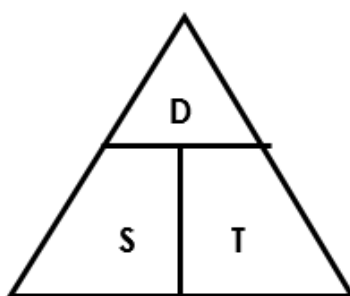
($T = \text{Distance} / \text{Speed}$)

Example, Alex wants to travel a 380 miles town, his car can run 60 miles an hour. How long will it take Alex to reach the town?

$$\text{Time} = \frac{\text{Distance}}{\text{Speed}} = \frac{350 \text{ miles}}{60 \text{ mph}} 6.33 \text{ hours}$$

Time is the quantity measured or measureable period during which an action, process or condition exists or continues.

We can use this equation to remember the formula in speed, distance and time, so that we can apply in our daily life, solving and analyzing situations, experiences that will require the estimate, calculation and computation of speed. distance and time.



What's More

Activity 4: Calculate Me

A.Directions: Calculate the distance. Use the formula ($D=S \times T$)

1. 3 hours at 40 km/h
2. 8 hours at 65 km/h
3. 2 hours at 26 km/h
4. 40 minutes at 75 km/minutes
5. 2 hours at 24 km/h

B.Directions: Calculate the time. Use the formula ($T=D/S$)

1. 200 kilometers at 20 km/h
2. 180 Kilometers at 40 km/h
3. 150 kilometers at 25km/h
4. 450 kilometers at 45km/h
5. 500 kilometers at 50 km/h

C.Directions: Calculate the Speed. Use the formula ($S = D/T$)

1. 10m in 30s
2. 20m in 80s
3. 100m in 40s
4. 25m in 20s
5. 80 m in 60s



What I Have Learned

Activity 5: Complete Me

Directions: Compute each driver's speed, distance and time. Use the formula. ($S = D/T$) ($D = S \times T$) ($T = D/S$)

Read and analyze the data in this table.

Driver's Name	Vehicle	Speed	Location	Distance	Time
1. Alex	Motorbike	30 km/h	Pagadian City	134 km	4 hrs
2. John	Car	40 km/h	Dapitan City	187 km	8 hrs
3. Jam	Van	42 km/h	Ozamiz City	219 km	12 hrs
4. Earl	Bus	50 km/h	Zamboanga City	135 km	6 hrs
5. Harris	Jeep	35 km/h	Dipolog City	172 km	10 hrs

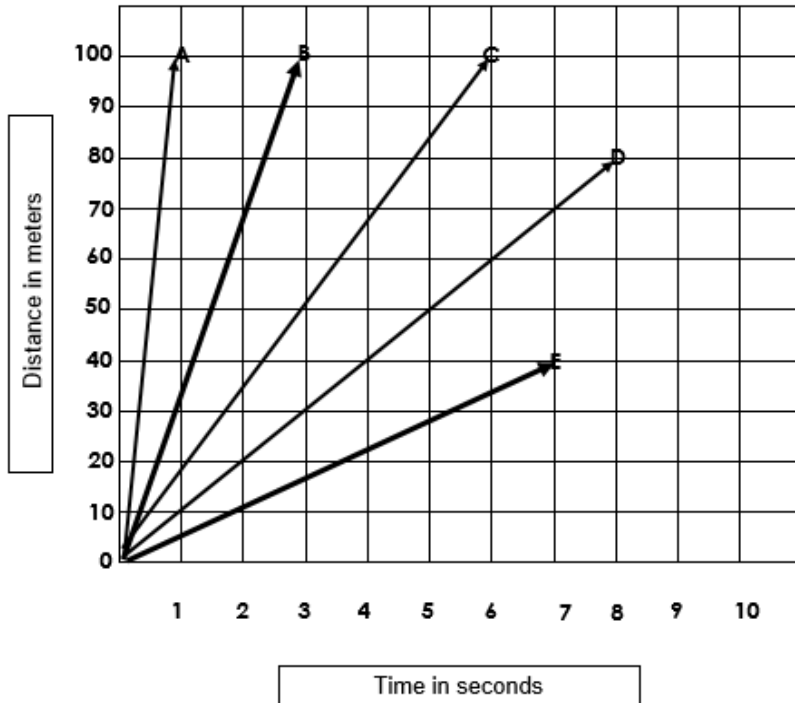
Driver's Name	Vehicle	Average Speed	Distance	Time
Alex	Motorbike			
John	Car			
James	Van			
Earl	Bus			
Harris	Jeep			



What I Can Do

Activity 6: Reading the lines

Directions: Read and interpret the distance time graph and supply answers below.
Round your answers to the nearest hundredths.



Calculate the speed.

1. Line A _____
2. Line B _____
3. Line C _____
4. Line D _____
5. Line E _____



Assessment

Directions: Read and encircle the letter of correct

1. Find the average speed of a car travelling 129 miles in 3 hours.
A. 44 mph B. 43 mph C. 42 mph D. 41 mph
2. In a race, Gina beats Liza by 7 seconds. What is Gina's time over the race if Liza finishes the race in 200 seconds?
A. 180 seconds B. 200 seconds C. 198 seconds D. 193 seconds
3. Ben walks at 5 km/h for 6 hr and at 4 km/h for 12 hr. Find Ben's average speed, using the formula.
A. 40.3 km/h B. 4 .33 km/h C. 42.2 km/h D. 4.31 Km/h
4. Lyka covers a distance of 75 km in 2 hrs and 30 minutes. What is her speed in Km/hr?
A. 10 km/hr B. 30 km/hr C. 35 km/hr D. 40 km/hr
5. Joseph crosses a 600m long street in 5 minutes. What is his speed in kilometer per hour?
A. 7.4 km/hr B. 7.2 km/hr C. 8.1 km/hr D. 10.7 km/hr

6. What is the formula in calculating average speed.?

- A. $S = D/T$ B. $S = T/D$ C. $S = D/S$ D. $S = T/S$

7. Alex and Andrew starts walking from the same place at a rate of 5 kph and 5.5 kph respectively. What time will they take to be 8.5 km apart if they will walk in the same direction? Determine the time.

- A. 18 hrs B. 20 hrs C. 19 hrs D. 17 hrs

8. Josh travelled from his town to the city riding his bicycle at the speed of 25 km/h. If Josh took 5 hours and 45 minutes to complete his journey. What is the distance between town and city?

- A. 140 km B. 150.75 km C. 143.75 km D. 130.25 km

9. Express a speed of 36 kph in meters per second?

- A. 10 m/ sec B. 11.1 m / sec C. 12.0 m/sec D. 13 m/sec

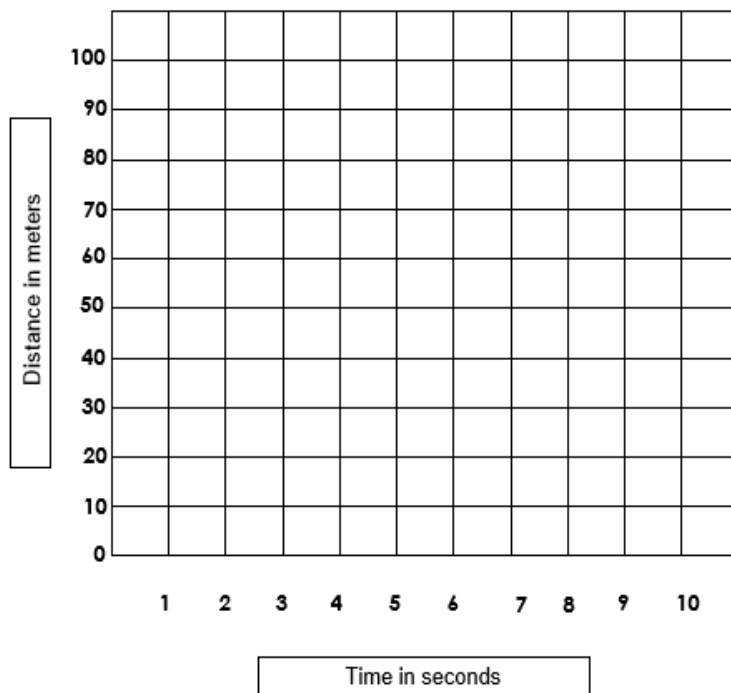
10. What is the average speed of a car if it travels 150 kilometers in 2 hours?

- A. 60 kph B. 65 kph C. 75 kph D. 80 kph



Additional Activity

Directions: Draw the following and calculate the speed.



Draw and calculate the speed.

1. 100 kilometers in 10 hours=
2. 80 kilometers in 4 hours=
3. 50 kilometers in 6 hours=
4. 65 kilometers in 5 hours=
5. 45 kilometers in 3 hours=

References

Perez, Marjoseph H., Donnel P. Placer, Jaime R. Burgos. 21st Century MATHletes 6. edited by Mercurio T. Elenzano, EdD, Chin Uy, Ph.D..Quezon City.Vibal Group, Inc..2016

Development Team

Writer:

Jerome M. Fundal
Pulawan Elementary School

Editors/QA:

Vilma S. Gumandao
Cirilo M. Cuanan, Jr.
Joel Mar Q. Labe , EMD

Reviewer:

Gina I. Lihao
EPS-Mathematics

Illustrator:

Layout Artist:

Management Team:

Evelyn F. Importante
OIC-CID Chief EPS

Dr. Jerry C. Bokingkito
OIC- Assistant SDS

Dr. Aurelio A. Santisas, CESE
OIC- Assistant SDS

Jeanelyn A. Aleman, CESO VI
OIC-Schools Division Superintendent