

 GRADES 1 to 12 DAILY LESSON LOG	School:		Grade Level:	VI
	Teacher:	<i>Credits to the Writer of this DLL</i>	Learning Area:	MATHEMATICS
	Teaching Dates and Time:	MARCH 27-31, 2023 (WEEK 7)	Quarter:	3RD QUARTER

	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
I. OBJECTIVES	The learner.....				
A. Content Standard	demonstrates understanding of rate and speed, and of area and surface area of plane and solid/space figures.				
B. Performance Standard	is able to apply knowledge of speed, area, and surface area of plane and solid/space figures in mathematical problems and real-life situations				
C. Learning Competencies / Objectives	calculates speed. M6ME-IIIg-17	calculates distance. M6ME-IIIg-17	calculates time. M6ME-IIIg-17	. solves problems involving average rate and speed. M6ME-IIIg-18 2 DAYS	
Measurement	Measurement	Measurement	Measurement		
III. LEARNING RESOURCES					
A. References					
1. Teacher's Guide pages	21 ST Century Mathletes, p.100-102	21 ST Century Mathletes, p.100-102	21 ST Century Mathletes, p.100-102	21 ST Century Mathletes, p.100-102	21 ST Century Mathletes, p.100-102
2. Learner's Materials pages	21 st Century Mathletes 6,	21 st Century Mathletes 6,	21 st Century Mathletes 6	21 st Century Mathletes 6,	21 st Century Mathletes 6,
3. Textbook pages	21 st Century Mathletes 6	21 st Century Mathletes 6	21 st Century Mathletes 6	21 st Century Mathletes 6,	21 st Century Mathletes 6,
4. Additional Materials from Learning Resource (LR) Portal					
B. Other Learning Resources	Mathletes 6 textbook, video clip, power point presentation	Mathletes 6 textbook, video clip, power point presentation, drawings of patterns, picture cards	Mathletes 6 textbook, video clip, power point presentation	Mathletes 6 textbook, video clip, power point presentation	Mathletes 6 textbook, video clip, power point presentation
IV. PROCEDURES					
A. Reviewing previous lesson or presenting the new lesson	Drill: Find the value of x in the ff. equations. $x - 10 = 7$ $5x - 2 = 10$ $3x + 8 = 20$ $5x = 35$ $x/4 = 2x - 1$ Review: Find the value of a in the ff. equation given that, b=10, c=12. $a = bc$ $a = b/c$ $a = c/b$ $2a = bc/2$	Drill: Group Activity: Distribute this activity sheet to each group:	Drill: Group Activity: Distribute this activity sheet to each group:	Drill: Group Activity: Distribute this activity sheet to each group: How long will it take you:  to drive 50 kilometers at a speed of 25 km/h?  to ride 10 kilometers on the back of a camel at 5 km/h?  to travel 20 kilometers on a bus that drives 60 km/h?  to cycle 90 kilometers at a speed of 20 km/h?  to travel 30 kilometers on a boat at a speed of 12 km/h?  to move a forklift 60 meters at a speed of 1.5 m/s?  to drive a golf cart 1,200 meters at a speed of 2 m/s?	

5. $a/2 = b/c$

How fast are you going if:

you run 12 kilometers in 2 hours?

you fly 1,500 kilometers in just 2 hours?



the bus you're on drives the 6 km to school in 10 minutes?

you walk 1 kilometer in only 12 minutes?



you ride 10 kilometers on your sledge in 4 hours?

the train you are on travels 180 kilometers in just 3 hours



you do a 20 kilometer trip on your snow scooter in 40 minutes

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Review: Group Activity
Distance Speed Time Formula
Questions:

1) A dog runs from one side of a park to the other. The park is 80.0 meters across. The dog takes 16.0 seconds to cross the park. What is the speed of the dog?

Answer: The distance the dog travels and the time it takes are given. The dog's speed can be found with the formula:

$$s = \frac{d}{t}$$
$$s = \frac{80.0m}{16.0s}$$

s = 5.0 m/s
The speed of the dog is 5.0 meters per second.

2) A golf cart is driven at its top speed of 27.0 km/h for 10.0 minutes. In meters, how far did the golf cart travel?

Answer: The first step to solve this problem is to change the units of the speed and time so that the answer found will be in meters, since this is what the question asks for. The speed is:

How far will you travel if:

you drive your car for 2 hours at an average speed of 100 miles/h?

you fly a plane for 4 hours at an average speed of 400 miles/h?



you ride your bicycle for 90 minutes at 20 miles/h?

you travel on a helicopter that flies 20 minutes at 180 miles/h?



you walk for 150 minutes at 1,760 yards/h?

you ride your motorbike for 12 minutes at 75 miles/h?



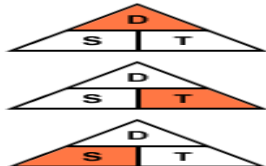
you take your tricycle for a 30 minutes spin at 7,040 yards/h?

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Review: Group Activity
1. Moving at 50 kmph, a person reaches his office 10 min late. Next day, he increases his speed and moves at 60 kmph and reaches his office 5 min early. What is the distance from his home to his office?
Solution: We can observe that difference in timings on both days is 15 min (and not 5 min, as one day he is late and on the other day he is early)
Let the required distance = D km. As time taken at the speed of 50 kmph is more than time taken at 60 kmph, so equation can be formed as D/50-D/60=15/60 .
Solving this equation, we get the answer as **75 km.**
2. Two trains NaMo Express and RaGa Express start towards each other from two cities,1800 m apart @50kmph and 58 Kmph respectively. As they start, a bird, named Democracy sitting at the front end of RaGa start flying towards NaMo, touches NaMo and then returns to RaGa and so on, until the trains meet. What distance did

Review: Group Activity
Speed, Distance, Time Worksheet.
1. A train travels at a speed of 30mph and travel a distance of 240 miles. How long did it take the train to complete it's journey? Ans: 8 hours
2. Susie estimated that she can run for hours at a steady rate of 8mph. She enters a marathon, a distance of 26miles. How long should it take her to complete the race? Give answer in hours/minutes. Ans: 3 hours 15 minutes
3. A car travels a distance of 540km in 6 hours. What speed did it travel at? Ans: 90km/h
4. A cyclist travels 20km in 4hrs. What speed did the cyclist cycle at? Ans: 5km/h
5. The distance between two cities is 144km, it takes me 3hours to travel between these cities. What speed did I travel at? Ans: 48km/h
6. A coach travels from the station to the beach, a distance of 576km away in 6hrs. The coach is only allowed to travel at a maximum speed of 90km/h. Did the coach break the speed limit? Ans: Yes, it travelled at 96km/h
7. Carlisle is a distance of 135miles away from Airdrie. If I travelled at a constant speed of 45mph. How long would it take me to get there? Ans: 3 hours
8.. A mouse runs a distance of 2metres in 15 seconds. What is it's speed? Ans: 0.13m/s
9. Marc was told his dinner would be ready at 18:00. He left his house at 12:00 and travelled in his car at an average speed of 45mph to his mum's house 300 miles away. Did Marc make it home in time for dinner? Ans: No, he arrived at 18:40
10. How long does it take to drive a distance of 260 miles at a speed of 65mph? Ans: 4 hours

		$s = 27.0 \text{ km/h}$ $s = 27.0 \frac{\text{km}}{\text{h}} \times \frac{1000\text{m}}{1\text{km}} \times \frac{1\text{h}}{60\text{min}} \times \frac{1\text{min}}{60\text{s}}$ $s = 7.50 \text{ m/s}$ Converting the units, the speed is 7.50 m/s. The time the cart traveled for was: $t = 10.0 \text{ min}$ $t = 10.0 \text{ min} \times \frac{60\text{s}}{1\text{min}}$ $t = 600\text{s}$ The speed of the cart and the time of travel are given, so the distance traveled can be found using the formula: $d = st$ $d = (7.50 \text{ m/s})(600 \text{ s})$ $d = 4500 \text{ m}$ The golf cart traveled 4500 m, which is equal to 4.50 km.	the bird travel in total if it was flying at the speed of 324 kmph ? Answer: 5400 m	
B. Establishing a purpose for the lesson	Filipinos are fond of traveling out of town and out of the country. It is really exciting to go out of the country. Because of technology, we can avail of different promos for cheap airfare as well as accommodation. Have you tried to do so? 2. the pupils will talk about the places they have been to. They will estimate the distance and time they traveled.	Let them watch the video of “Finding Distance (Know speed, time)	Let them watch the video of “Speed, Distance and Time”	Let them watch the video of “Speed, Distance and Time”

C. Presenting Examples/Instances of new lesson	Present the problem below: John drove for 3 hours at a rate of 50 miles per hour and for 2 hours at 60 miles per hour. What was his average speed for the whole journey? Let the pupils analyze the problem. Then find the answer. Solution: Step 1: The formula for distance is $Distance = Rate \times Time$ Total distance = $50 \times 3 + 60 \times 2 = 270$ Step 2: Total time = $3 + 2 = 5$ Step 3: Using the formula Answer: The average speed is 54 miles per hour. Be careful! You will get the wrong answer if you add the two speeds and divide the answer by two	We will discuss here how to find the distance when speed and time are given. When speed and time are given, the distance travelled is calculated by using the formula: Distance = Speed $\times$ Time The unit of time in speed should be the same as that of the given time. Present the problem below: A heavy loaded truck travels at the rate of 60 miles per hour. How long it will take for it to travel 200 miles? Solution: Given: Rate of travel r = 60 miles per hour, Displacement d = 200 miles we know displacement d = rt The time taken is given by $t = d/r$ $= 200 \text{ miles} / 60 \text{ miles per hour}$ $= 3.33 \text{ hours}$ it will take 3.33 hours to complete the distance.	We will discuss here how to find the time when speed and distance are given. When distance and speed are given the time taken is calculated by using the formula: Time = Distance/Speed Present the problem below: A train travelled 555 miles at an average speed of 60 mph. How long did the journey take? Time = Distance/speed $= 555 / 60$ $= 9 \text{ hours } 15 \text{ mins}$ Answer: It took 9 hours 15 minutes	Present the problem posted in Engaged part. Textbook page 253. Jonathan bought a new car. He drove his car from Manila to Baguio City at an average speed of 65kilometers per hour, for a total of 4.5 hours. How far did he travel? Give enough time for the pupils to analyze the problem. Then ask the ff. a. What is asked? b. What are the given in the problem? c. What equation will be formed How do we find distance given the speed and time? Discuss thoroughly the solution in Explore part (Txbk p.253-254) Explain the relationship between speed, distance and time. Present the formula posted in explain part. In this problem, we were given a speed of 65kms per hour, and time of 4.5 hours. To find the total distance traveled, we can simply multiply the given speed and time. Distance = $65 \times 4.5 = 292.5$ Answer: He traveled 292.5 kilometers
D. Discussing new concepts and practicing new skills #1	The relationship between speed, distance and time can be expressed in the ff. equations:  Distance = Speed $\times$ Time Time= $\frac{\text{Distance}}{\text{Speed}}$ Speed= $\frac{\text{Distance}}{\text{Time}}$ An easy way to remember the distance, speed and time equations is to put the letters into a triangle. The triangles will help you remember these 3 rules: Distance = Speed $\times$ Time Time = Distance/Speed Speed= Distance/Time <i>When we say a track event at the Palarong Pambansa is 500 meters long, we are defining its distance. Yet most people are interested in the time taken to run it. Equally, however, we could consider them to run a longer distance in the same time. Both points of view are exactly the same. All that we are talking about is their average speed, which is defined by:</i> 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. Average speed = distance / time	LC1545 Speed, Distance and Time Speed determines "how fast an object is moving". It is measured as distance travelled per unit of time.  Speed = $\frac{\text{Distance}}{\text{Time}}$  Distance = Speed $\times$ Time  Time = $\frac{\text{Distance}}{\text{Speed}}$ Conversion: To convert m/s to km/h Distance covered in 1 sec = 1 m, $\therefore$ distance covered in 3600 s = 3600 m I.e. in 1 hr = 3.6 km covered $\therefore$ 1m/s = 3.6 km/hr To convert km/h to m/s Distance covered in 1 hr = 1 km 1 hr = 3600 seconds I.e Distance covered in 3600 sec = 1000 m $\therefore$ Distance covered in 1 sec = 1000/3600 m $\therefore$ 1 km /hr = 0.2777... m/s Discuss the speed, distance and time concept. Then the conversion of units (See power point presentation) Another example:		

Why is the term average speed used? Think about how the race happens- they start from being rest, speed up and run at almost the same speed throughout.

In everyday life, we use speeds like kilometers per hour (km/hr), whereas in this race we use meter per second (m/s)

Speed – is a scalar quantity that refers to “how fast an object is moving”. Speed can be thought of as the rate by which an object covers distance.

A fast moving object has a high speed and covers a relatively long distance in a short amount of time. Contrast this to a slow-moving object that has a low speed and covers a relatively small amount of distance in the same amount of time. An object with no movement at all has a zero speed.

Distance- is the total length between two positions.
Time- is the quantity measured or measurable period during which an action, process or condition exists or continues.

The equation for speed can be remembered from the unit itself: m/s – m is meters (distance), s is seconds (time). It can, of course, be arranged to give:

Time = distance/speed and distance = speed x time

Discuss also the table lists units in common use for speed and their abbreviations. (Discuss also the concept of speed, time and distance. Then the conversion of units (See power point presentation)

Distance	Time	Speed	Abbreviation
miles	hour	miles per hour	Mph
kilometers	hours	kilometers per hour	Km/h or kph
meters	seconds	meters per second	m/s
feet	seconds	feet per second	f.p.s or ft. per sec
centimeters	seconds	centimeters per second	Cm/sec or cm/s

Example 1: If a car travels 100kilometers in 2 hours, find the average speed.

Solution:

Using the average speed formula:

Average speed = distance/time
=100/2 = 50 kph

Example 2: a world-record holder ran 800 meters in 86 seconds. What was his average speed rounded to the nearest tenths?

Solution:

Average speed formula:
Ave. speed = distance / time =
800m/86 s =9.3m/s

Solved examples to calculate distance when speed and time are given:

How much distance will be covered in 5 hrs at a speed of 55 km per hour?

Solution:

Distance covered in 1 hour = 55 km.

We know, Distance = Speed x Time

Distance covered in 5 hrs = 55 x 5
= 275 km.

Therefore, distance covered in 5 hrs = 275 km

2. A bus travels at a speed of 45 km/hour. How far will it travel in 36 minutes?

Solution:

Speed = 45 km/hour

Time = 36 minutes

= 36/60 Hour (Since we know, 1 hour = 60 minutes)

Solved examples to calculate time when speed and distance are given:

1. How much time will be taken to cover a distance of 300 km at a speed of 60 km per hour?

Solution:

Time taken to cover 60 km = 1 hour.

Time taken to cover 1 km = 1/60 hour.

Time taken to cover 300 km = 1/60 x 300 hour = 5 hours.

Therefore, time taken to cover 300 km is 5 hours.

2. A man runs at the speed of 15 km per hour. How much time will he take to cover 750 metres?

Speed = 15 km per hour

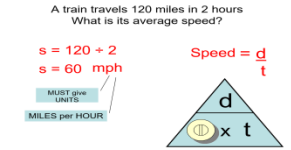
Distance = 750 metres = 750/1000 km
= ¾ km

Time = distance/speed = (3/4 ÷ 15) km

Present the ff. problems:

1.A train travels 120 miles in 2 hours

What is its average speed?



2.A runner's average speed is 8m/s, how far does he run in 25



3 A ferry leaves Stoke, travels 100km to Leeds at an average speed of 10km/h. How long did the journey take?

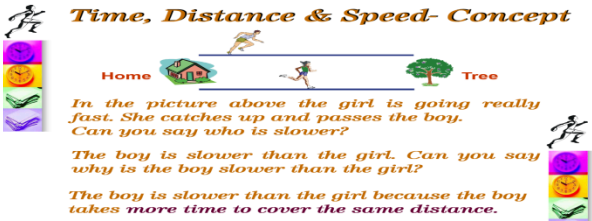
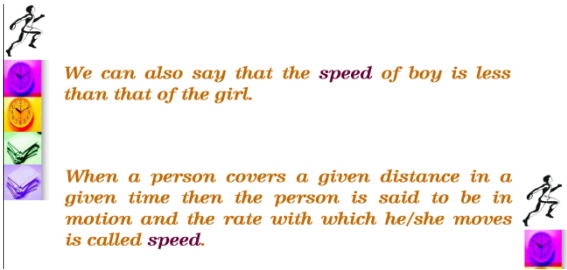
$t = 100 \div 10$
 $t = 2.5 \text{ hours}$

Time = $\frac{d}{s}$

d
 $s \times t$

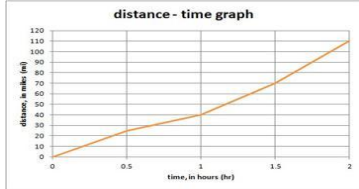
Solve:

- How long does it take to travel a distance of 672km at a speed of 96km/h? Ans: 7 hours
- A beetle travels at a speed of 9cm/s., it travels a distance of 108cm before it is caught in a jar. How long did the beetle run for? Ans: 12s
- Neil travelled 36km at a speed of 8km/h. Grant travelled 48km at a speed of 10km/h a) Whose journey was quickest? b) By how many mins? Ans: a) Neil was quickest at 4.5 hours. Grant was 4.8 hours. b) 18 mins
- John is a runner. He runs the 100m sprint in 10x6s. What speed did he travel at? (in m/s) Ans: 9.4m/s
- Jim travelled at a speed of 18km/h for 2 hours. What was the distance covered? Ans: 36km
- A girl cycles for 3hrs at a speed of 40 km/h. What distance did she travel? Ans: 120km
- A whale swims at a constant speed of 8m/s for 17s. What distance did it travel? Ans: 136m
- At the equator, the earth spins a distance of 25,992miles every day. What speed does the Earth spin at in mph? Ans: 1083mph

		$= \frac{3}{5}$ hour Distance = speed $\times$ time $= 45 \times (\frac{3}{5})$ km $= (45 \times 3)/5$ km $= 27$ km.	$= (\frac{3}{4} \times \frac{1}{15})$ hr $= \frac{1}{20}$ hr $= \frac{1}{20} \times 60$ min = 3 minutes.	9. Callum writes down his jog times for each day. Mon – 15min Tue – 10min Wed – 12min Thu - 5min Fri – No jog. He jogs at a constant speed of 9km/h. Work out the distance he jogs each day. On which day did he jog the furthest? Ans: Mon – 2.25km Tue – 1.5km Wed – 1.8km Thu – 0.75km. He travelled furthest on Monday 10. Lauren walks 100m in half a minute. What must her speed have been to travel this distance? Ans: 3.33m/s
E. Discussing new concepts and practicing new skills #2	Show video of average speed word problems. Note: Pause the video for problem no. 2 and let the pupils answer the problem by group. To know the answer to the problem play the video again, then click pause again for the problem no. 3, play again the video if they are already done answering the problem to know if their answer is correct.	Group Activity: Answer the ff. 1.Caleb roller skates with a constant speed of 10 km/h. How far can he travel in $\frac{1}{2}$ hour? 2.An airplane flies with a constant speed of 600 km/h. How far can it travel in 1 hour? 3.A van moves with a constant speed of 52 km/h. How far can it travel in $1\frac{1}{2}$ hours? 4. A car drives with a constant speed of 62 miles per hour. How far can it travel in 1 hour? 5. Nancy rides her horse with a constant speed of 10 miles per hour. How far can she travel in $\frac{1}{2}$ hour? 6. A police car drives with a constant speed of 56 miles per hour. How far can it travel in 3 hours? Answer: 1.He can travel 5 kilometers in $\frac{1}{2}$ hour. 2. It can travel 600 kilometers in 1 hour. 3. It can travel 78 kilometers in $1\frac{1}{2}$ hours. 4. It can travel 62 miles in 1 hour. 5. She can travel 5 miles in $\frac{1}{2}$ hour. 6. It can travel 168 miles in 3 hours.	Group Activity: Answer the ff. 1. How much time will it take for a bug to travel 5 meters across the floor if it is traveling at 1 m/s? 2. You need to get to class, 200 meters away, and you can only walk in the hallways at about 1.5 m/s. (if you run any faster, you'll be caught for running). How much time will it take to get to your class? 3. In a competition, an athlete threw a flying disk 139 meters through the air. While in flight, the disk traveled at an average speed of 13.0 m/s. How long did the disk remain in the air?	 Time, Distance & Speed- Concept <i>In the picture above the girl is going really fast. She catches up and passes the boy. Can you say who is slower?</i> <i>The boy is slower than the girl. Can you say why is the boy slower than the girl?</i> <i>The boy is slower than the girl because the boy takes more time to cover the same distance.</i>  <i>We can also say that the speed of boy is less than that of the girl.</i> <i>When a person covers a given distance in a given time then the person is said to be in motion and the rate with which he/she moves is called speed.</i> Discuss the example problems on pages 256-257 - Roy drives at an average of 45 mph on a journey of 135 miles. How long does the journey take? - Vncent's motorcycle's average speed on a motorcycle is 50km/h. if he drives it for $4\frac{1}{2}$ hours, how far does he travel? - Daniel can type 840 words in 20 minutes. Calculate his typing speed in:

				a. Words per minute b. Words per hour c. Nandy has to travel a total of 476 km. he travels the first 224km in 4 hrs. a. Calculate his average speed for the first part of the journey. b. If his average speed remains the same, calculate the total time for him to complete the journey.
F. Developing mastery (Leads to Formative Assessment)	Group Activity: 1. Grace rides her horse 36 miles in 2 hours 15 minutes. What is the average speed in miles per hour? 2. Pete rides his motorcycle 75 miles in $3\frac{3}{4}$ hours. What is his average speed in miles per hour? 3. An airplane flies 360 km in $\frac{1}{2}$ hour. What is its average speed in kilometers per hour? 4. An airplane flies 1680 km in 1 hour 45 minutes. What is its average speed in kilometers per hour? 5. An airplane flies 1305 miles in $2\frac{1}{4}$ hours. What is its average speed in miles per hour? 6. David rides his motorcycle 105 miles in 1 hour 45 minutes. What is his average speed in miles per hour? Answer: 1. Her average speed is 16 miles per hour. 2. His average speed is 20 miles per hour. 3. Its average speed is 720 kilometers per hour. 4. Its average speed is 960 kilometers per hour.	Group Activity: 1. How much distance will be covered in 7 hrs at a speed of 62 km per hour? Solution: Distance covered in 1 hour = 62 km. We know, Distance = Speed $\times$ Time Distance covered in 7 hrs = 62×7 = 434 km. Therefore, distance covered in 7 hrs = 434 km. 2. Mike drives his car at a speed of 70 km per hour. How much distance will he cover in 3 hours 30 minutes? Solution: Speed of the car = 70 km/hr Time taken = 3 hours 30 minutes = $3\frac{1}{2}$ hours. Distance covered in 1 hour = 70 km Distance covered in $3\frac{1}{2}$ hr = $70 \times 3\frac{1}{2}$ km = $70 \times 7/2$ km = 245 km. 3. How much distance will be covered in $1\frac{1}{2}$ hour at a speed of 32 m per minute? Solution: $[1\frac{1}{2} \text{ hr} = (60 + 30) \text{ minutes} = 90 \text{ minutes}]$. Distance covered in 1 minute = 32 metres. Distance covered in 90 minutes = $32 \times$	Group Activity: 1. How much time will be taken to cover a distance of 450 km at a speed of 50 km per hour? Solution: Time taken to cover 50 km = 1 hour. Time taken to cover 1 km = $1/50$ hour. Time taken to cover 450 km = $1/50 \times 450$ hour = 9 hours. Therefore, time taken to cover 450 km is 9 hours. 2. A motorist rickshaw covers a distance of 150 km at a speed of 30 km/hour. Find the time taken to cover this distance. Time = distance/speed Time = $150 \text{ km} / (30 \text{ km/hour})$ = $(150 \text{ km} / 30 \text{ km}) \times \text{hour}$ = 5 hours. 3. A cyclist covers a distance of 12 km at a speed of 8 km per hour. Calculate the time taken to cover this distance. Speed = 8 km/hour Distance covered = 12 km Time taken = total distance covered/speed = $15/8$ hour = $3/2$ hours = $1\frac{1}{2}$ hours. 4. How much time will be taken to cover 20 m at a speed of 20 cm per second?	Group Activity: 1. A person crosses a 600 m long street in 5 minutes. What is his speed in km per hour? Answer: 23.76 km/hr Explanation: Speed = $\left(\frac{600}{5 \times 60}\right) \text{ m/sec.}$ = 2 m/sec. Converting m/sec to km/hr (see important formulas section) = $\left(2 \times \frac{18}{5}\right) \text{ km/hr}$ = 7.2 km/hr. 2. An aeroplane covers a certain distance at a speed of 240 kmph in 5 hours. To cover the same distance in $1\frac{2}{3}$ hours, it must travel at a speed of: a. 300 kmph b. 360 kmph c. 600 kmph d. 720 kmph Answer: Option D Explanation: Distance = $(240 \times 5) = 1200 \text{ km.}$ Speed = Distance/Time Speed = $1200 / (5/3) \text{ km/hr.}$ [We can write $1\frac{2}{3}$ hours as $5/3$ hours] $\therefore$ Required speed = $\left(1200 \times \frac{3}{5}\right) \text{ km/hr} = 720 \text{ km/hr.}$ 3. If a person walks at 14 km/hr instead of 10 km/hr, he would have walked 20 km more. The actual distance travelled by him is: a. 50 km b. 56 km c. 70 km d. 80 km

	5.Its average speed is 580 miles per hour. 6. His average speed is 60 miles per hour.	90 = 2880 m. We know, 1 m = 1/1000 km. = 2880/1000 km. = 2.88 km. 4. How far can you get away from your little brother with the squirt gun filled with paint if you can travel at 3 m/s and you have 15s before he sees you? 5. How far can your little brother get if he can travel at 2.5 m/s and in 5 seconds you will discover that his squirt gun has run out of paint?	Solution: Time taken to cover 20 cm = 1 sec. Time taken to cover 1 cm = 1/20 sec. 1 metre = 100 cm, 20 metre = 20 × 100 cm.= 2000 cm. Time taken to cover 20 m = 1/20 × 2000 = 200 sec. Therefore, time taken to cover 20 m is 200 sec.	Answer: Option A Explanation: Let the actual distance travelled be x Then, $\frac{x}{10} = \frac{x + 20}{14}$ $\Rightarrow 14x = 10x + 200$ $\Rightarrow 4x = 200$ $\Rightarrow x = 50$ km. 4A train can travel 50% faster than a car. Both start from point A at the same time and reach point B 75 kms away from A at the same time. On the way, however, the train lost about 12.5 minutes while stopping at the stations. The speed of the car is: a. 100 kmph b. 120kmph c. 110kmph d. 130kmph Answer: Option C Explanation: Let speed of the car be x kmph. Then, speed of the train = $\frac{150}{100}x = \left(\frac{3}{2}x\right)$ kmph $\therefore \frac{75}{x} - \frac{75}{(3/2)x} = \frac{125}{10 \times 60}$ $\Rightarrow \frac{75}{x} - \frac{50}{x} = \frac{5}{24}$ $\Rightarrow x = \left(\frac{25 \times 24}{5}\right) = 120$ kmph. 5.Excluding stoppages, the speed of a bus is 54 kmph and including stoppages, it is 45 kmph. For how many minutes does the bus stop per hour? a.9 b. 10 c. 12 d. 20 Answer: Option B Explanation: Due to stoppages, it covers 9 km less. Time taken to cover 9 km = $\left(\frac{9}{54} \times 60\right)$ min = 10 min. Day 2: To deepen pupils’ understanding of the concept, let them answer the problems on Deepening, page 101, 21st Century Mathletes TG
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G. Finding practical applications of concepts and skills in daily living	Group Activity: Distribute an activity sheet to each group. 1.A small robot can travel a distance of 32.5 meters in 13 seconds. What is the average speed of the small robot? 2.5 mph 2.5 mps 0.4 mph 0.4 m/s 2.A truck travels between two cities according to the distance-time graph shown below. What is the truck's average speed for the first hour? What is the truck's average speed for the entire trip?  a.50mph, 5 mph b.40mph, 55 mph c.46.7 mph, 55mph d.55mph, 55 mph 3. A car travels in segments that are described in the table below. What is the average speed of the car? <table border="1"><thead><tr><th>Segment</th><th>Distance (km)</th><th>Time (hr)</th></tr></thead><tbody><tr><td>1</td><td>32</td><td>0.5</td></tr><tr><td>2</td><td>90</td><td>1.5</td></tr><tr><td>3</td><td>67</td><td>1</td></tr></tbody></table> a.63.67kph b.67 kph c.64 kph d. 63 kph 4.Find speed when, distance is 142 km and time is 2 hours	Segment	Distance (km)	Time (hr)	1	32	0.5	2	90	1.5	3	67	1	Pair-share: 1. A farmer travelled a distance of 61 km in 9 hours. He travelled partly on foot @ 4 km/hr and partly on bicycle @ 9 km/hr. The distance travelled on foot is: a.14km b.15km c.16km d.17km Answer: Option C Explanation: Let the distance travelled on foot be x km. Then, distance travelled on bicycle = (61 -x) km. So, $\frac{x}{4} + \frac{(61-x)}{9} = 9$ $\Rightarrow 9x + 4(61 -x) = 9 \times 36$ $\Rightarrow 5x = 80$ $\Rightarrow x = 16$ km. 2. A man covered a certain distance at some speed. Had he moved 3 kmph faster, he would have taken 40 minutes less. If he had moved 2 kmph slower, he would have taken 40 minutes more. The distance (in km) is: a.35 b.36 2/3 c. 37 ½ d.40 Answer: Option D Explanation: Let distance = x km and usual rate = y kmph. Then, $\frac{x}{y} - \frac{x}{y+3} = \frac{40}{60} \Rightarrow 2y(y+3) = 9x$(i) And, $\frac{x}{y-2} - \frac{x}{y} = \frac{40}{60} \Rightarrow y(y-2) = 3x$(ii) On dividing (i) by (ii), we get: x = 40. 4. If you shout into the Grand Canyon, your voice travels at the speed of sound (340 m/s) to the bottom of the canyon and back, and you hear an echo. How deep is the Grand Canyon at a spot where you can hear your echo 5.2 seconds after you shout?	Pair-share: 1.A cycle race is going on, a cyclist is moving with the speed of 2 km/hr. He has to cover a distance of 5 km. How much time will he need to reach his destiny? Solution: Given: Speed x = 2 km/hr, Distance Covered d = 5 km, time taken t = ? Speed is given by formula: x = d/t Time taken t = d/x = 5km/2km/hr = 2.5 hr = 9000 s. Time taken by the Cyclist is 2.5 hr 2. In a flight of 600 km, an aircraft was slowed down due to bad weather. Its average speed for the trip was reduced by 200 km/hr and the time of flight increased by 30 minutes. The duration of the flight is: a.1hr b.2hrs c.3hrs d.4hrs Answer: Option A Explanation: Let the duration of the flight be x hours. Then, $\frac{600}{x} - \frac{600}{x+(1/2)} = 200$ $\Rightarrow \frac{600}{x} - \frac{1200}{2x+1} = 200$ $\Rightarrow x(2x+1) = 3$ $\Rightarrow 2x^2 + x - 3 = 0$ $\Rightarrow (2x+3)(x-1) = 0$ $\Rightarrow x = 1$ hr. [neglecting the -ve value of x]	Group Activity: Solve the ff. problems 1.The speed of the train is 72 km per hour. Find its speed in metre per second. 2. Express the speed of 60 m per minute in km per hour. 3. A man runs at the speed of 10 km/hr. How much time will he take to cover 750 metres? 4. Aaron ran 500 metre in 100 Seconds. Find the speed in km per hour. 5. Find out the distance covered when, speed is 960 km/hour and time is 1 hour 50 minutes. 6. Determine the time taken when, distance is 7150 km and speed is 780 km/hr 7. If distance travelled by a train is 495 km in 4 hours 30 minutes, what is its speed? 8. 6.A cyclist travels at a speed of 20 km/hour. How far will he travels in 50 minutes? 9.A man complete a journey in 10 hours. He travels first half of the journey at the rate of 21 km/hr and second half at the rate of 24 km/hr. Find the total journey in km. a.220km b. 224km c.230km d.234km Answer: Option B Explanation: $\frac{(1/2)x}{21} + \frac{(1/2)x}{24} = 10$ $\Rightarrow \frac{x}{21} + \frac{x}{24} = 20$ $\Rightarrow 15x = 168 \times 20$ $\Rightarrow x = \left(\frac{168 \times 20}{15} \right) = 224$ km. 10.The ratio between the speeds of two trains is 7 : 8. If the second train runs 400 km in 4 hours, then the speed of the first train is: a.70km/hr b. 75km/hr c. 84km/hr d. 87.5 km/ hr Answer: Option D Explanation: Let the speed of two trains be 7x and 8x km/hr. Then, $8x = \left(\frac{400}{4} \right) = 100$ $\Rightarrow x = \left(\frac{100}{8} \right) = 12.5$ $\therefore$ Speed of first train = (7 x 12.5) km/hr = 87.5 km/hr. Day 2: A. Answer the ff. problems: 1. A boy walks at a speed of 4 kmph. How much time does he take to walk a distance of 20 km? Solution Time = Distance / speed = 20/4 = 5 hours. 2. A cyclist covers a distance of 15 miles in 2 hours. Calculate his speed. Solution
Segment	Distance (km)	Time (hr)														
1	32	0.5														
2	90	1.5														
3	67	1														

5. A cyclist covers 950 m in 5 minutes. Find his speed in km/hour.

5. Find out the distance covered when, speed is 960 km/hour and time is 1 hour 50 minutes.

Speed = Distance/time = 15/2 = 7.5 miles per hour.
3. A car takes 4 hours to cover a distance, if it travels at a speed of 40 mph. What should be its speed to cover the same distance in 1.5 hours?
Solution
Distance covered = 4*40 = 160 miles
Speed required to cover the same distance in 1.5 hours = 160/1.5 = 106.66 mph

4.A man on tour travels first 160 km at 64 km/hr and the next 160 km at 80 km/hr. The average speed for the first 320 km of the tour is:
a.35.55km/hr b. 36 km/hr
c. 71.11 km/hr d. 71 km/hr

Answer: Option C
Explanation:
Total time taken = $\left(\frac{160}{64} + \frac{160}{80}\right)$ hrs. = $\frac{9}{2}$ hrs.
 $\therefore$ Average speed = $\left(320 \times \frac{2}{9}\right)$ km/hr = 71.11 km/hr.

5.A car travelling with $\frac{5}{7}$ of its actual speed covers 42 km in 1 hr 40 min 48 sec. Find the actual speed of the car.
a. 17 $\frac{6}{7}$ km/hr b.25 km/hr
c.30km/hr d.5km/hr

Answer: Option D
Explanation:
Time taken = 1 hr 40 min 48 sec = 1 hr 40 $\frac{4}{5}$ min = 1 $\frac{51}{75}$ hrs = $\frac{126}{75}$ hrs.
Let the actual speed be x km/hr.
Then, $\frac{5}{7}x \times \frac{126}{75} = 42$
 $\Rightarrow x = \left(\frac{42 \times 7 \times 75}{5 \times 126}\right) = 35$ km/hr.

				B. Use 4-step plan to answer the ff. problems: 1. A taxi travels with a constant speed of 90 km per hour. How far can it travel in 6 hours? 2. Leth drives her car and covered a distance of 385 kms. In 3 ½ hours. What is her average speed in kms. per hour? 3. A car travels 360 kms in 4 hours. What is the average speed of the car in kms per hour? 4. A bus had an average speed of 65 kph for 3 hours in the morning. The bus had an average speed of 70 kph for 2.5 hours in the afternoon. What’s the total distance covered by the bus? 5. A train leaves the first station at 6:00a.m. and arrives at the last station at 6:30 a.m. f the distance between the first and last station is 25kms, what is the average speed of the train?
H. Making generalizations and abstractions about the lesson	How to Calculate Speed? The Speed can be calculated by finding how much distance traveled by the body and in how much time with respect to the point of observation. Once we find these two things (distance traveled and time taken to travel the distance), we can divide the distance traveled by the time taken to obtain the speed of the object using formula, Speed = distance/ time Where d = distance traveled t = time taken.	How to calculate distance? To find distance, speed is beside time, so distance is speed multiplied by time. Distance = speed/time	How to calculate time? To find time, use the formula: Time = distance / speed	How do you solve problems involving average rate and speed.

I. Evaluating Learning	Calculate the speed of the ff. problems: 1. If a car travels 400m in 20 seconds how fast is it going? 2. If you move 50 meters in 10 seconds, what is your speed? 3. You arrive in my class 45 seconds after leaving math which is 90 meters away. How fast did you travel? 4. A plane travels 395,000 meters in 9000 seconds. What was its speed? 5. It takes Serina 0.25 hours to drive to school. Her route is 16 km long. What is Serina’s average speed on her drive to school?	Calculate the distance that you would travel if you drove for: 1. 2 hours at 30 km/h 2. 7 hours at 65 km/h 3. ½ hour at 46 km/h 4. 45 minutes at 80 km/h 5. 1 ½ hours at 55 km/h	How long does it take to travel: 1. 100 km at 20km/h? 2. 180 km at 45 km/h? 3. 250 km at 75 km/h? 4. 280 km at 60 km/h? 5. 320 km at 85 km/h?	Solve each problem: Mathletes p. 257-258
J. Additional activities for application and remediation	Question 2: A man rides the bike with the speed of 60 miles in 3/4 hours. Calculate the speed of the bike? Solution: Given : Distance Covered d = 60 miles, Time taken t = 3/4 hours. Speed is calculated using the formula: $x = d/t$ = 60miles x 3/4hrs = 60 miles × 4/3hr = 80 miles/hr.	Question 1: Lilly is driving a scooty with the speed of 6 km/hr for 2hr. How much distance will she travel? Solution: Given: Speed of the scooty x = 6km/hr Time taken t = 2 hr Distance traveled d = ? Speed distance time formula is given as: $x = dt$ Distance traveled $d = x \times t$ = 6 km/hr × 2 hr = 12 km.	Answer Math Challenge 1-3	Answer Math Challenge 4-5
V. Remarks				
VI. REFLECTIONS				
A. No. of learners who earned 80% on the formative assessment				
B. No. of learners who require additional activities for remediation who scored below 80%				

C. Did the remedial lessons work? No. of learners who have caught up with the lesson				
D. No. of learners who continue to require remediation				
E. Which of my teaching strategies worked well? Why did this work?				
F. What difficulties did I encountered which my principal or supervisor can help me solve?				
G. What innovation or localized materials did I use/discover which I wish to share with other teachers?				