

Rate-Time-Distance Problems

$$\text{Rate} \times \text{Time} = \text{Distance}$$

$$\text{Distance} + \text{Distance} = \text{Distance}$$

$$\text{Time} + \text{Time} = \text{Time}$$

Sep 19-5:43 PM

A motorcycle traveling at 50 miles per hour overtakes a car traveling at 30 miles per hour that had a three-hour head start. How many miles from the starting point are the two vehicles?

What multiplying formula will we use?

	Rate	Time	Distance
Motorcycle	50	x	$50 \cdot x$
Car	30	$x + 3$	$30(x + 3)$

When the motorcycle catches the car the distances will be the same.

$$50x = 30(x + 3)$$

Sep 19-5:47 PM

1

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Sep 19-5:47 PM

Linda and Dave leave simultaneously from the same starting point biking in opposite directions. Linda bikes at 6 miles per hour and Dave bikes at 9 miles per hour. How many hours will it be until they are 23 miles apart from each other?

What multiplying formula will we use?

	Rate	x Time	= Distance
Linda	6	x	6 · x
Dave	9	x	9 · x
Total			23

$$6x + 9x = 23$$

Sep 19-5:47 PM

2 Leave your answer as an improper fraction.

Linda and Dave leave simultaneously from the same starting point biking in opposite directions. Linda bikes at 6 miles per hour and Dave bikes at 9 miles per hour. How many hours will it be until they are 23 miles apart from each other?

$$6x + 9x = 23$$

$$\frac{15x}{15} = \frac{23}{15}$$

$$x = \frac{23}{15}$$

Sep 19-5:47 PM

Jeff starts driving at 55 miles per hour from the same point that Lauren starts driving at 50 miles per hour. They drive in opposite directions, and Lauren has a half-hour head start. How many hours will it take before they are 390 miles apart?

What multiplying formula will we use?

	Rate	x	Time	=	Distance
Jeff	55		x		$55x$
Lauren	50		$x + 0.5$		$50(x + 0.5)$
Total					390

$$55x + 50x + 25 = 390$$



Sep 19-5:47 PM

3 Leave your answer as an improper fraction.

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$$55x + 50x + 25 = 390$$

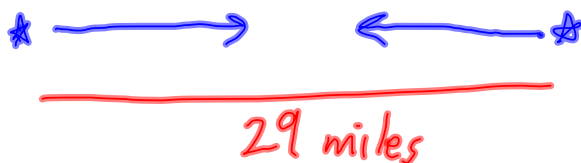
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Alexander and Judy are 29 miles apart on a calm lake paddling toward each other. Alexander paddles at 4 miles per hour, while Judy paddles at 7 miles per hour. How many hours will it take them to meet?

What multiplying formula will we use?

	Rate	× Time	= Distance
Alexander	4	x	4x
Judy	7	x	7x
Total			29

$$4x + 7x = 29$$



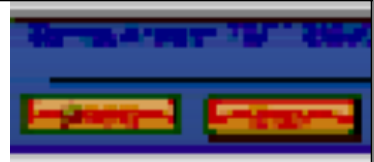
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How many hours will it take them to meet?



Sep 19-5:47 PM

On a road trip, five friends drove at 50 miles per hour to California. On the way home, they took the same route but drove 65 miles per hour. How many miles did they drive on the way to California if the round trip took 10 hours?

What multiplying formula will we use?

	rate	time	= dist
To	50	t	$50t$
From	65	$10 - t$	$65(10 - t)$
total		10	

$$50t = 65(10 - t)$$

$$50t = 650 - 65t$$

$$115t = 650$$

$$t = \frac{650}{115}$$

$$t = \frac{130}{23}$$

Dist. will be

$$50t$$

$$50t = 50 \left(\frac{130}{23} \right)$$

$$= \frac{6500}{23}$$

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5 Round your answer to the nearest whole number.

On a road trip, five friends drove at 50 miles per hour to California. On the way home, they took the same route but drove 65 miles per hour. How many miles did they drive on the way to California if the round trip took 10 hours?



Sep 19-5:47 PM

Dave can hike on level ground 3 miles an hour faster than he can on uphill terrain. Yesterday, he hiked 35 miles, spending 2 hours on level ground and 5 hours on uphill terrain. Find his average speed on level ground.

What multiplying formula will we use?

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6 Leave your answer as an improper fraction.

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