## Contest Problem Set 12114 Target Round Problem 2

## David Sun

Math League, LLC



David Sun

Problem	Solution	
	0000	
Identify the objective.		

Randolf is going to the convenience store that is 320 meters away. He starts running at a rate of 40 kilometers per hour for the first 180 meters. After feeling tired, he decides to walk the rest of the way to the convenience store at a rate of 4 kilometers per hour. To the nearest whole number, how many seconds in total does it take him to reach the convenience store?



David Sun

	Solution	
	0000	
Compute the number of seconds Randolf takes to reach the	e convenience store, rounded to the nearest whole number.	

We consider 2 cases:



David Sun

	Solution	
	●000	
Compute the number of seconds Randolf takes to reach the	e convenience store, rounded to the nearest whole number.	

We consider 2 cases:

■ 180 m, 40 kph



David Sun

We consider 2 cases:

- 180 m, 40 kph
- 140 m, 4 kph



David Sun

	Solution	
	0000	
Compute the number of seconds Randolf takes to reach the	e convenience store, rounded to the nearest whole number.	



David Sun

 $180 \text{ m} \cdot \frac{1 \text{ hr}}{40 \text{ km}}$ 



David Sun



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$$180 \text{ m} \cdot \frac{1 \text{ hr}}{40 \text{ km}} = 180 \text{ m} \cdot \frac{3600 \text{ s}}{40000 \text{ m}}$$



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$$180 \text{ m} \cdot \frac{1 \text{ hr}}{40 \text{ km}} = 180 \text{ m} \cdot \frac{3600 \text{ s}}{40000 \text{ m}} = 180 \text{ m} \cdot \frac{9 \text{ s}}{100 \text{ m}}$$



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$$180 \text{ m} \cdot \frac{1 \text{ hr}}{40 \text{ km}} = 180 \text{ m} \cdot \frac{3600 \text{ s}}{40000 \text{ m}} = 180 \text{ m} \cdot \frac{9 \text{ s}}{100 \text{ m}}$$
$$= 9 \text{ m} \cdot \frac{9 \text{ s}}{5 \text{ m}}$$

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$$180 \text{ m} \cdot \frac{1 \text{ hr}}{40 \text{ km}} = 180 \text{ m} \cdot \frac{3600 \text{ s}}{40000 \text{ m}} = 180 \text{ m} \cdot \frac{9 \text{ s}}{100 \text{ m}}$$
$$= 9 \text{ m} \cdot \frac{9 \text{ s}}{5 \text{ m}} = \frac{81 \text{ s}}{5}$$



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$$180 \text{ m} \cdot \frac{1 \text{ hr}}{40 \text{ km}} = 180 \text{ m} \cdot \frac{3600 \text{ s}}{40000 \text{ m}} = 180 \text{ m} \cdot \frac{9 \text{ s}}{100 \text{ m}}$$
$$= 9 \text{ m} \cdot \frac{9 \text{ s}}{5 \text{ m}} = \frac{81 \text{ s}}{5} = 16.2 \text{ s}$$

David Sun

	Solution	
	0000	
Compute the number of seconds Randolf takes to reach the	e convenience store, rounded to the nearest whole number.	



David Sun

	Solution	
	0000	
Compute the number of seconds Randolf takes to reach the	e convenience store, rounded to the nearest whole number.	

140 m, 4 kph:



David Sun

140 m, 4 kph:

 $140 \text{ m} \cdot \frac{1 \text{ hr}}{4 \text{ km}}$ 



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140 m, 4 kph:

140 m 
$$\cdot \frac{1 \text{ hr}}{4 \text{ km}} = 140 \text{ m} \cdot \frac{3600 \text{ s}}{4 \text{ km}}$$



David Sun

140 m, 4 kph:

 $140 \ m \cdot \frac{1 \ hr}{4 \ km} = 140 \ m \cdot \frac{3600 \ s}{4000 \ m}$ 



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140 m, 4 kph:

140 m 
$$\cdot \frac{1 \text{ hr}}{4 \text{ km}} = 140 \text{ m} \cdot \frac{3600 \text{ s}}{4000 \text{ m}} = 140 \text{ m} \cdot \frac{9 \text{ s}}{10 \text{ m}}$$



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140 m, 4 kph:

140 m 
$$\cdot \frac{1 \text{ hr}}{4 \text{ km}} = 140 \text{ m} \cdot \frac{3600 \text{ s}}{4000 \text{ m}} = 140 \text{ m} \cdot \frac{9 \text{ s}}{10 \text{ m}}$$
$$= 14 \cdot 9 \text{ s}$$



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140 m, 4 kph:

140 m 
$$\cdot \frac{1 \text{ hr}}{4 \text{ km}} = 140 \text{ m} \cdot \frac{3600 \text{ s}}{4000 \text{ m}} = 140 \text{ m} \cdot \frac{9 \text{ s}}{10 \text{ m}}$$
$$= 14 \cdot 9 \text{ s} = 126 \text{ s}$$

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	Solution	
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Compute the number of seconds Randolf takes to reach the	e convenience store, rounded to the nearest whole number.	

140 m, 4 kph: 126



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140 m, 4 kph: 126

16.2 + 126



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140 m, 4 kph: 126

16.2 + 126 = 142.2



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140 m, 4 kph: 126

$$16.2 + 126 = 142.2 \approx 142$$



David Sun

	Solution 0000	Reflection ●
Review the concepts.		

## Concepts



David Sun

	Solution 0000	Reflection ●
Review the concepts.		



casework



David Sun

	Solution 0000	Reflection ●
Review the concepts.		



casework

rates



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