

CALCULATING WAGES & INCOME



Personal Finance: Rounding Time to 15 Minutes

Tick-Tock goes the clock, how many minutes has it got?



Lesson Objective

Students will learn the basics of time and how to convert time to decimals.



Parts of a Clock

Big Hand



Little Hand

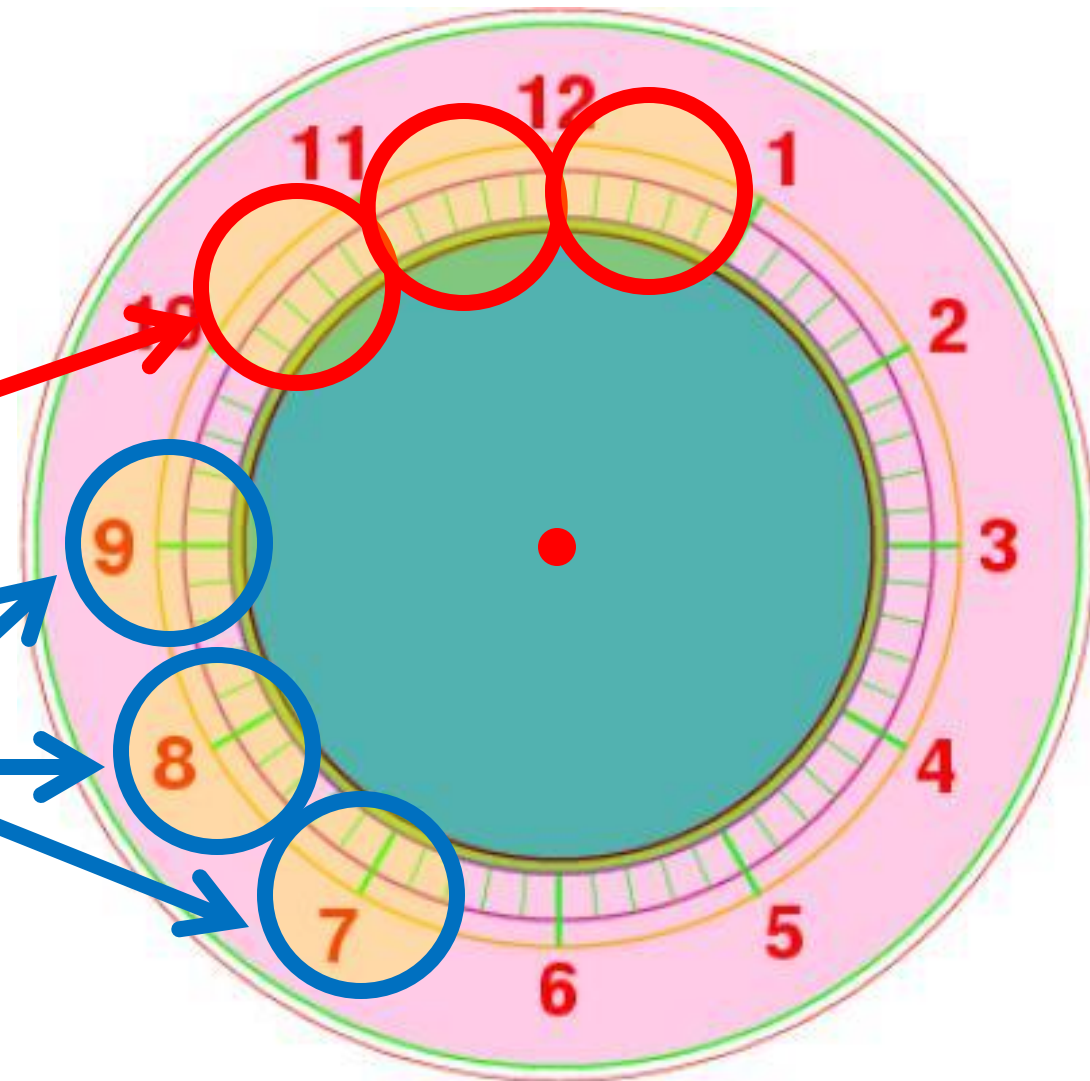




Parts of a Clock

Markers

The markers MARK off time on the clock. The **small marks** designate the minute spaces, the **big marks** designate 5 minute spaces as well as hours.

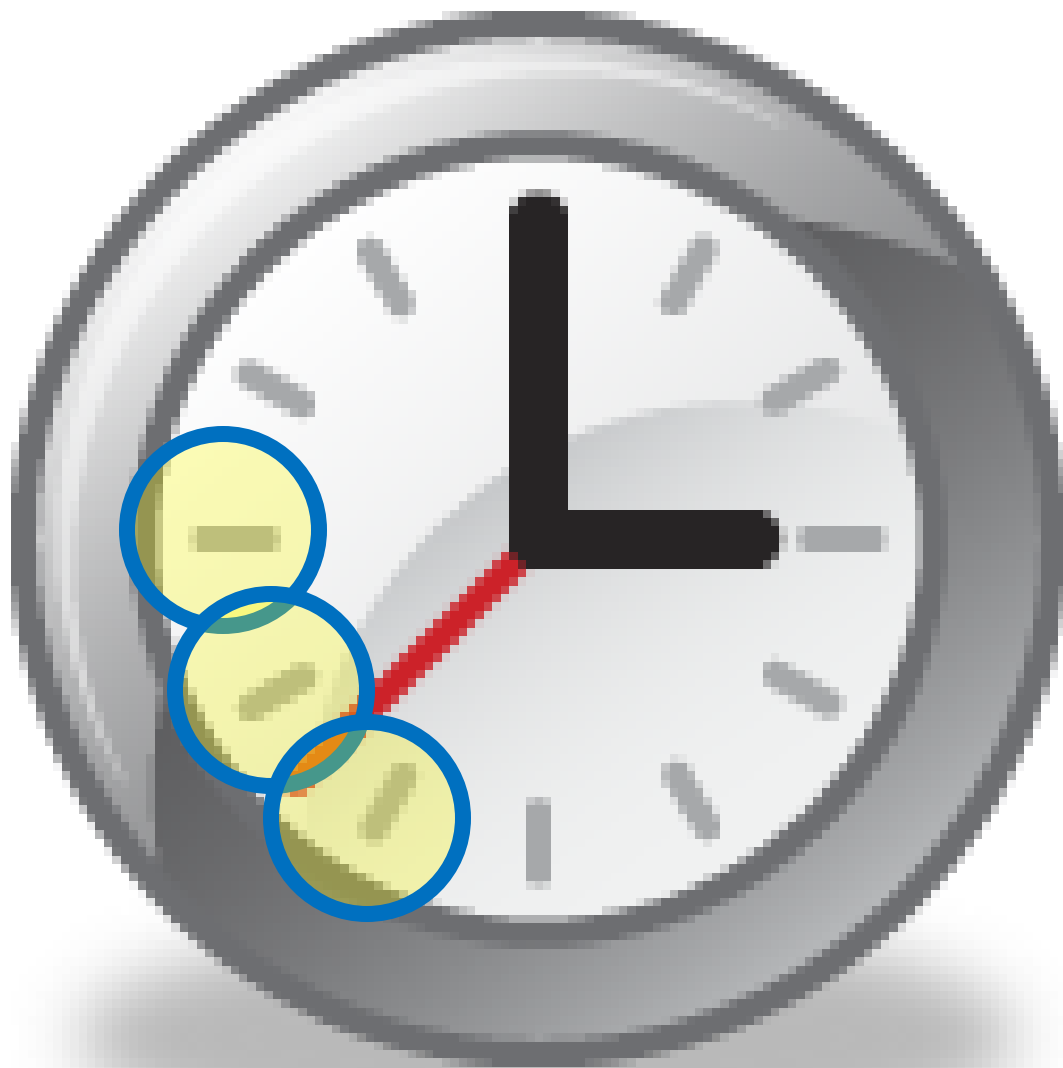




Parts of a Clock

Markers

Not all clocks have numbers on them, but the big lines will still indicate the hour and five minutes. 12 o'clock is always at the top of the clock with 1 o'clock to its right and counting forward as you continue around.





Parts of a Clock

Markers

What hour is shown in the circle?





Parts of a Clock

Markers

What hour is shown in the circle?

9 o'clock

Notice that the clock does not tell you AM or PM. You will have to use your deductive skills to determine that. Try looking outside to see if the sun is up.



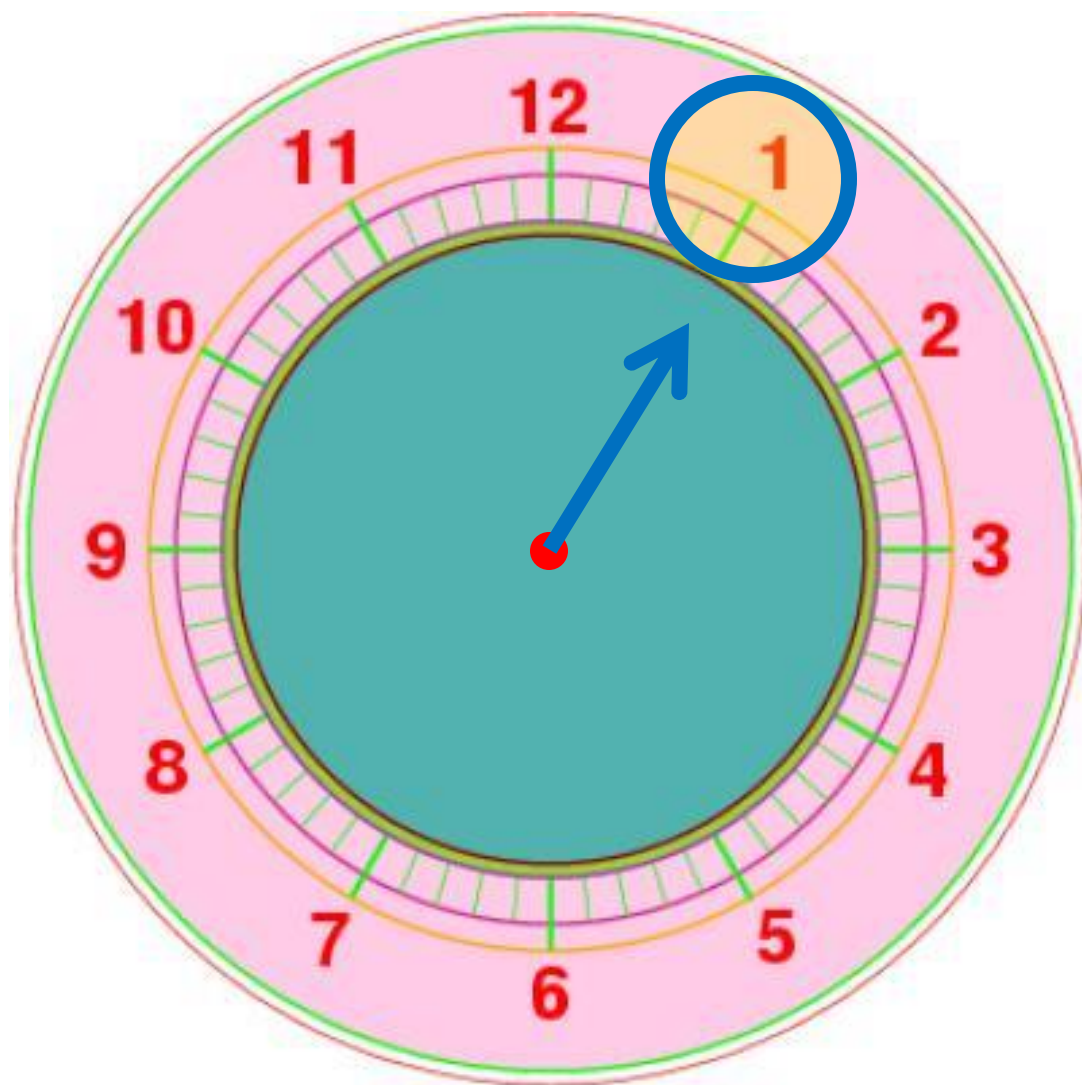


Parts of a Clock

Little Hand

The little hand on a clock points to the **big marks** showing the hours.

In this example it is pointing at the number one, meaning One o'clock.

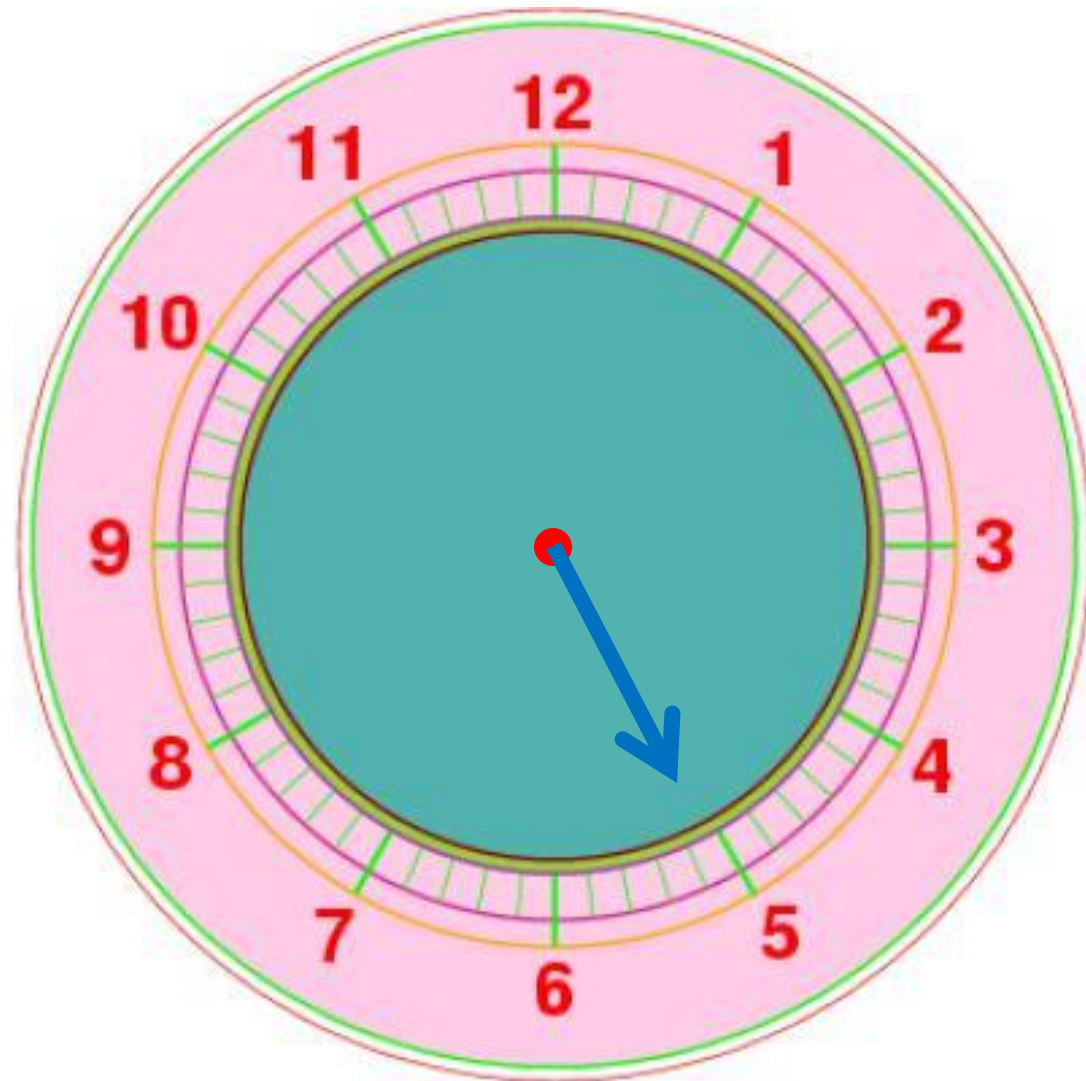




Parts of a Clock

Little Hand

What hour is it showing now?



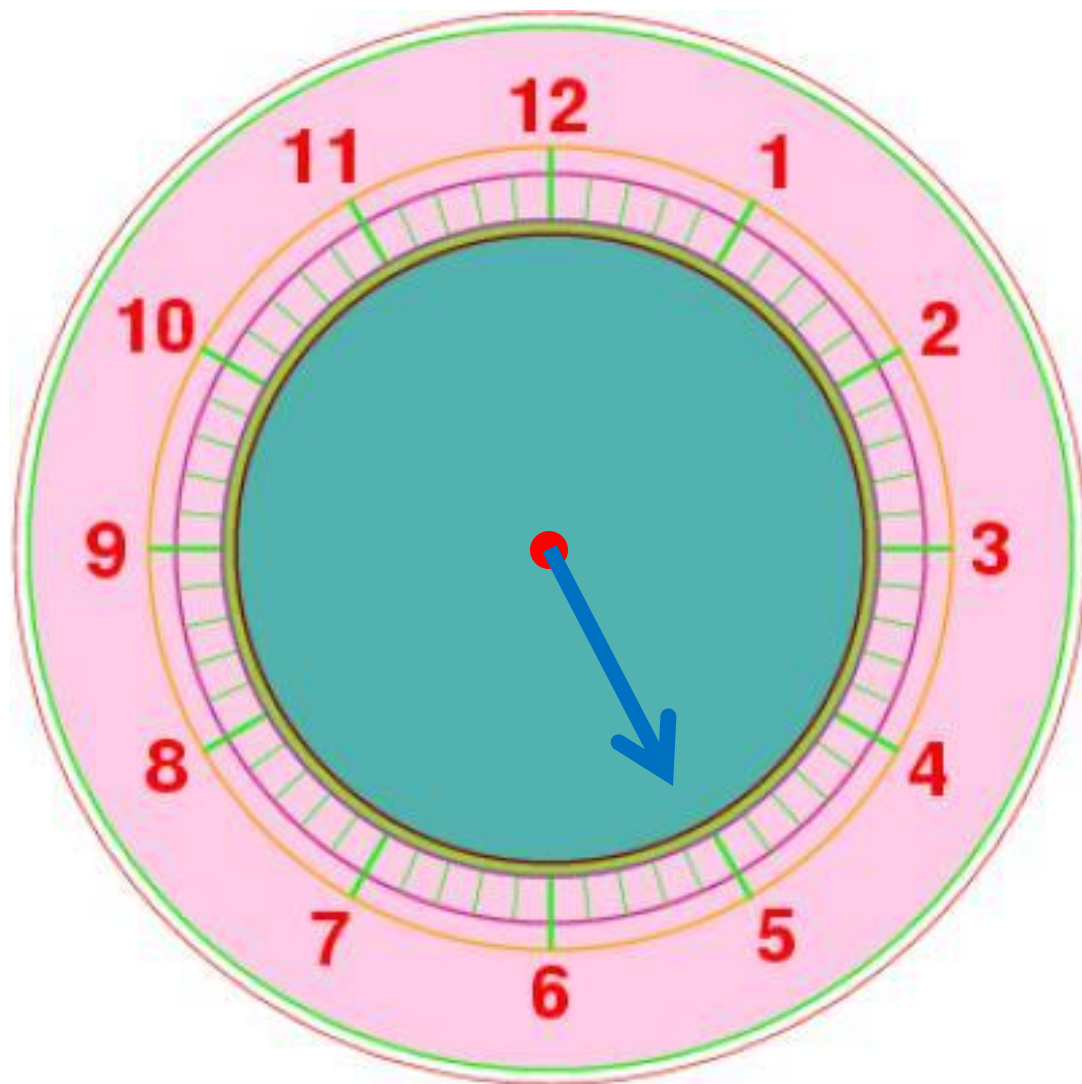


Parts of a Clock

Little Hand

What hour is it showing now?

5 o'clock

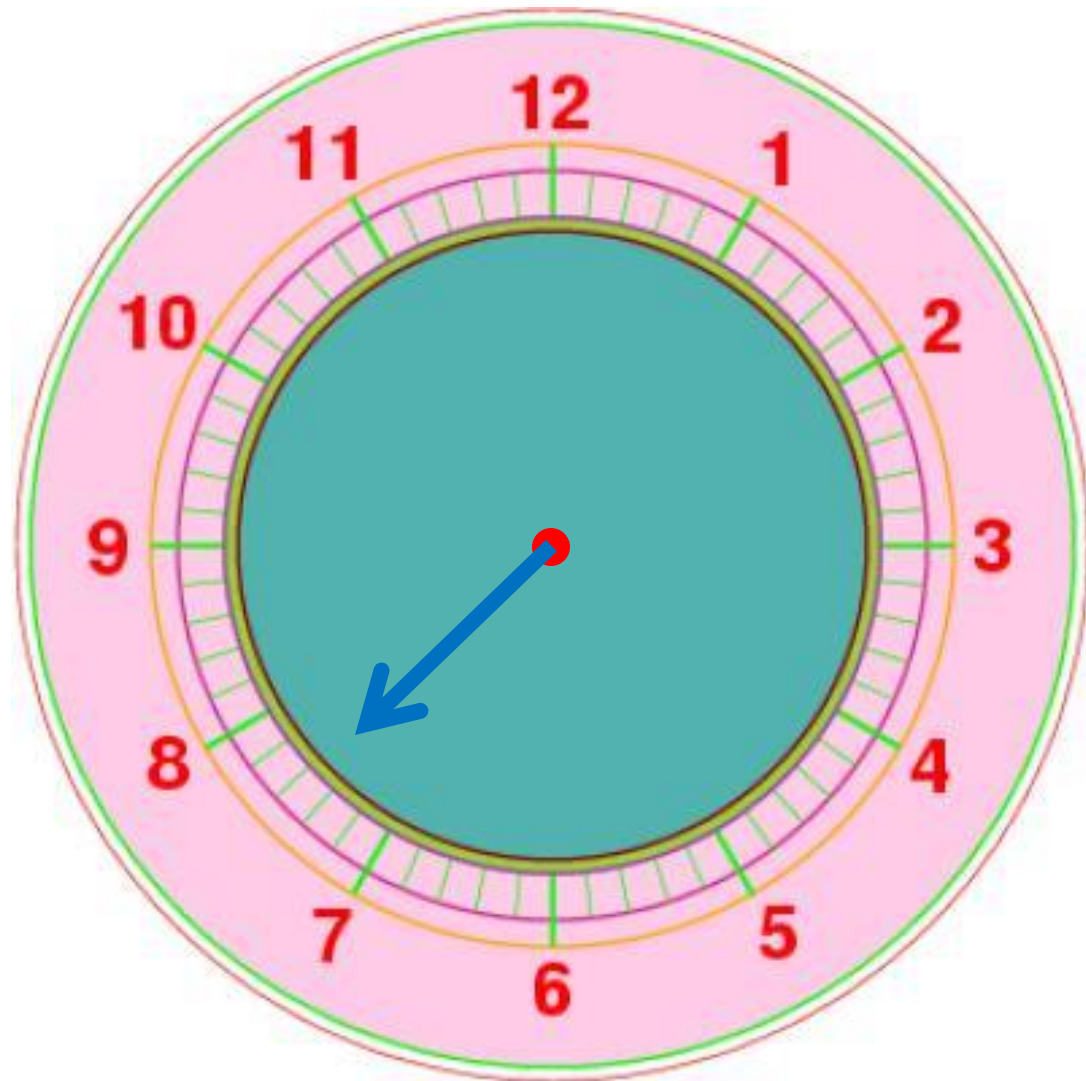




Parts of a Clock

Little Hand

What hour is it showing now?



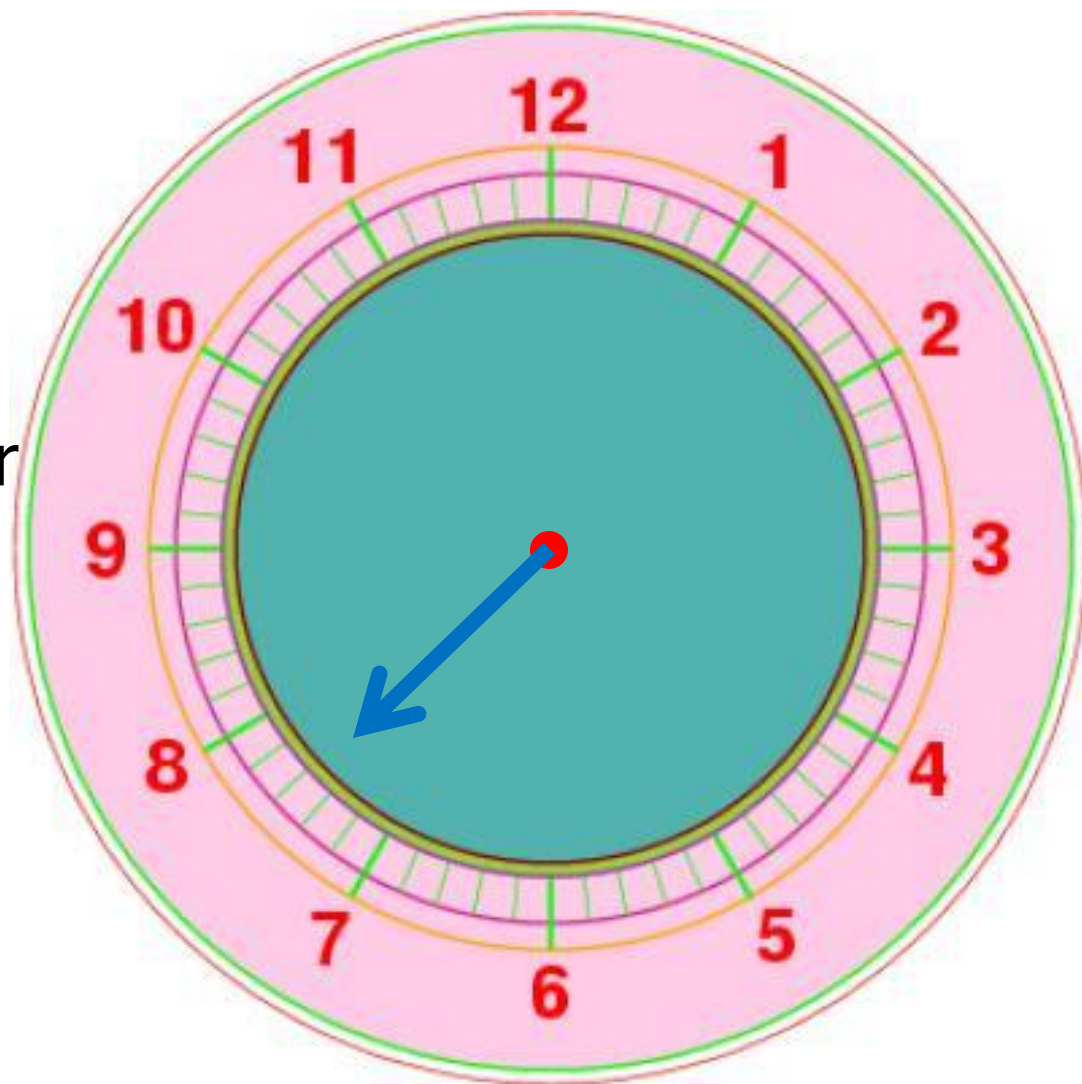


Parts of a Clock

Little Hand

What hour is it showing now?

The hour, is always based on the last hour mark passed, until it actually reaches the new mark. Because the little hand has passed the 7, but has not yet reached the 8, it is still **7 o'clock**.



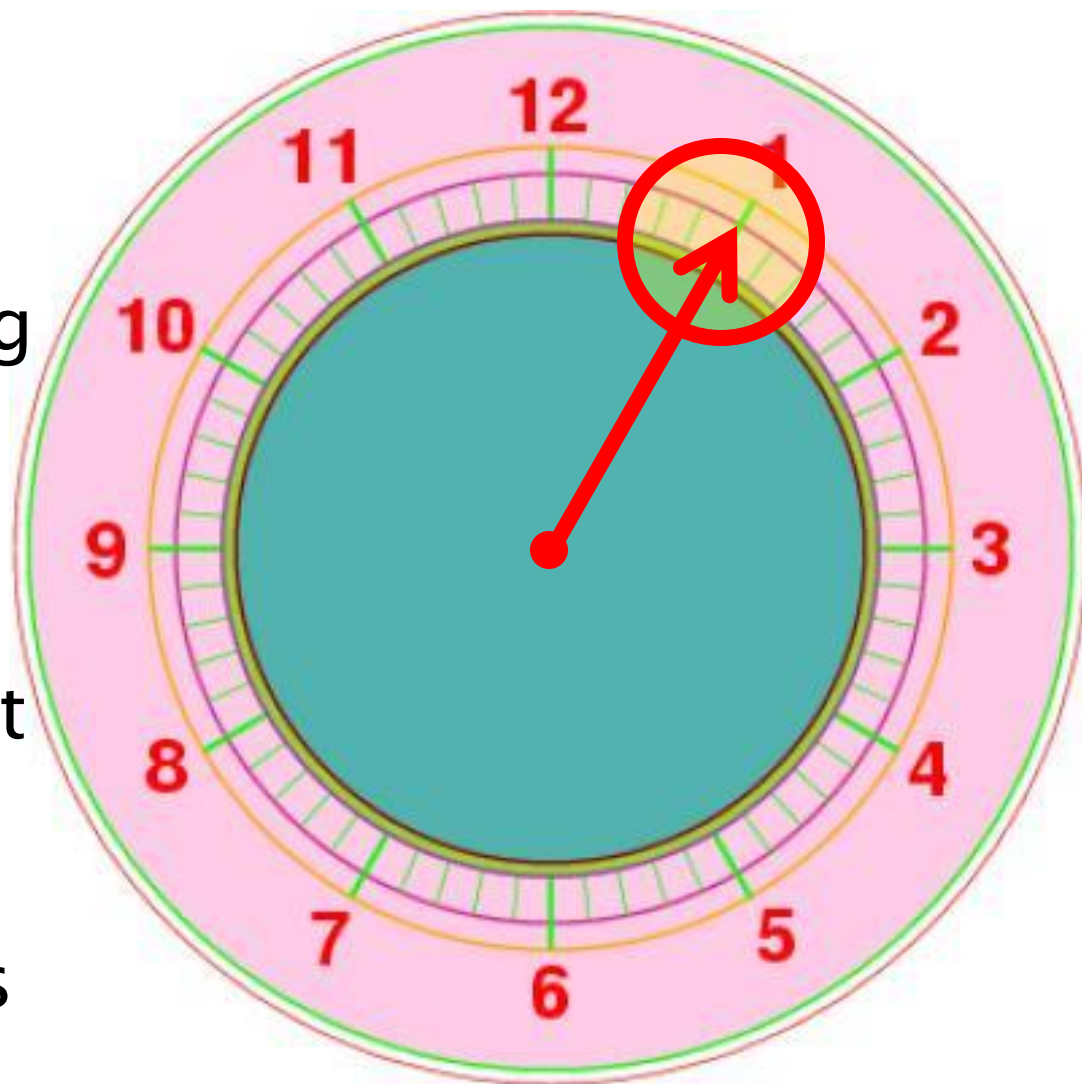


Parts of a Clock

Big Hand

The big hand on a clock points to the **small marks** showing the minutes.

In this example it is pointing at the first big mark. Because it is the fifth small mark (the first big mark) 5 minutes has passed.



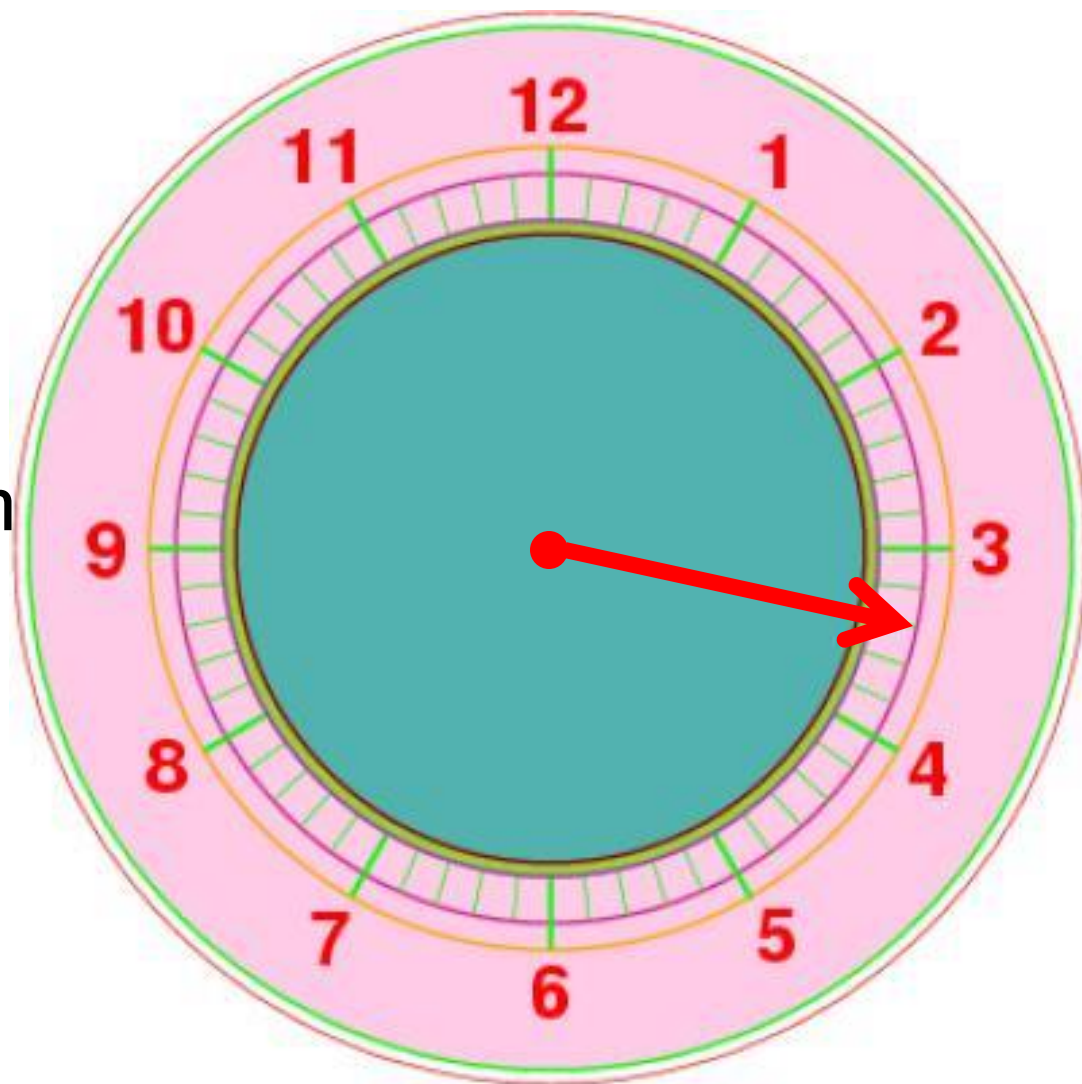


Parts of a Clock

Big Hand

What minute is it showing now?

Hint: Count every mark beginning with the first one after the 12 until you reach the mark the big hand is pointing to.



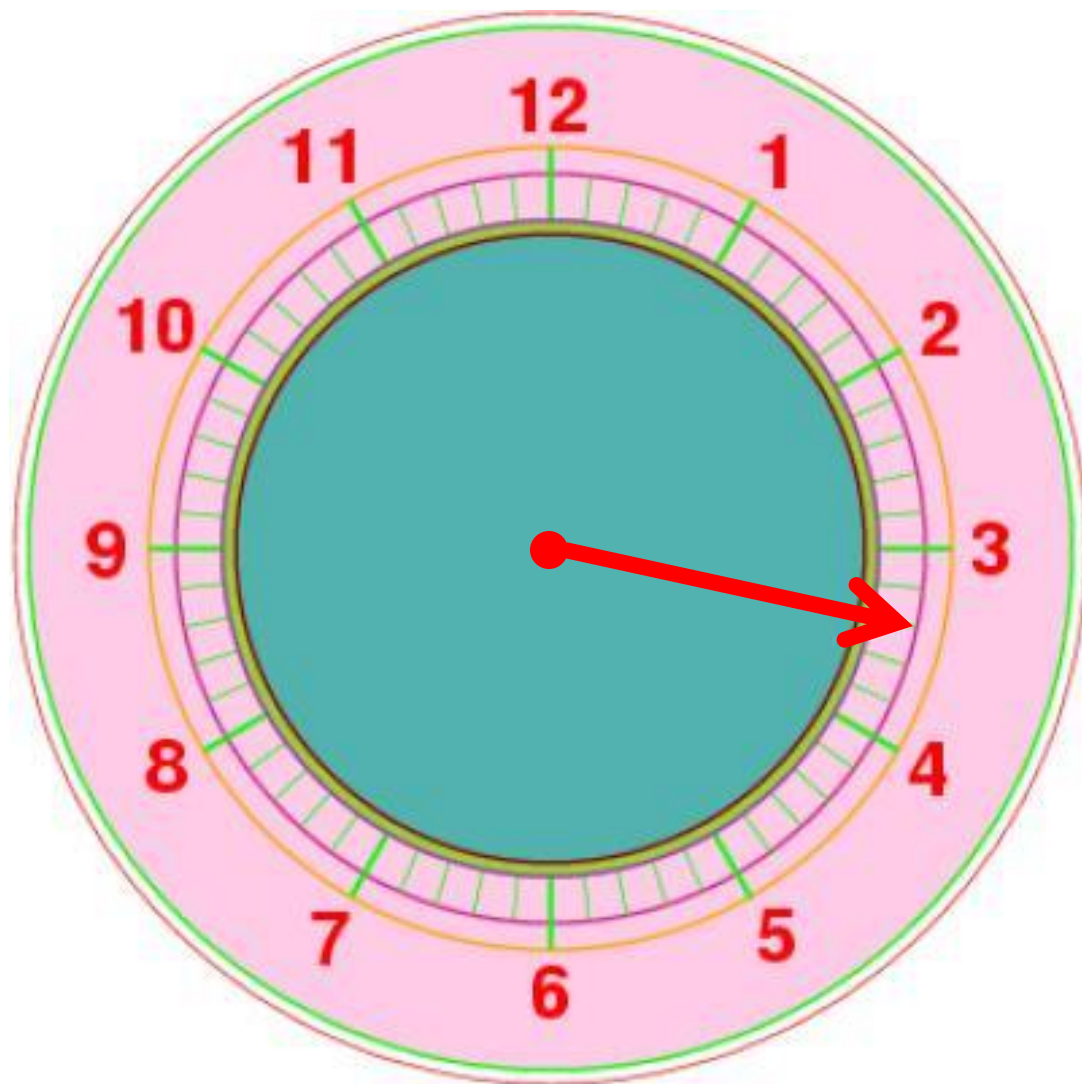


Parts of a Clock

Big Hand

What minute is it showing now?

17 minutes



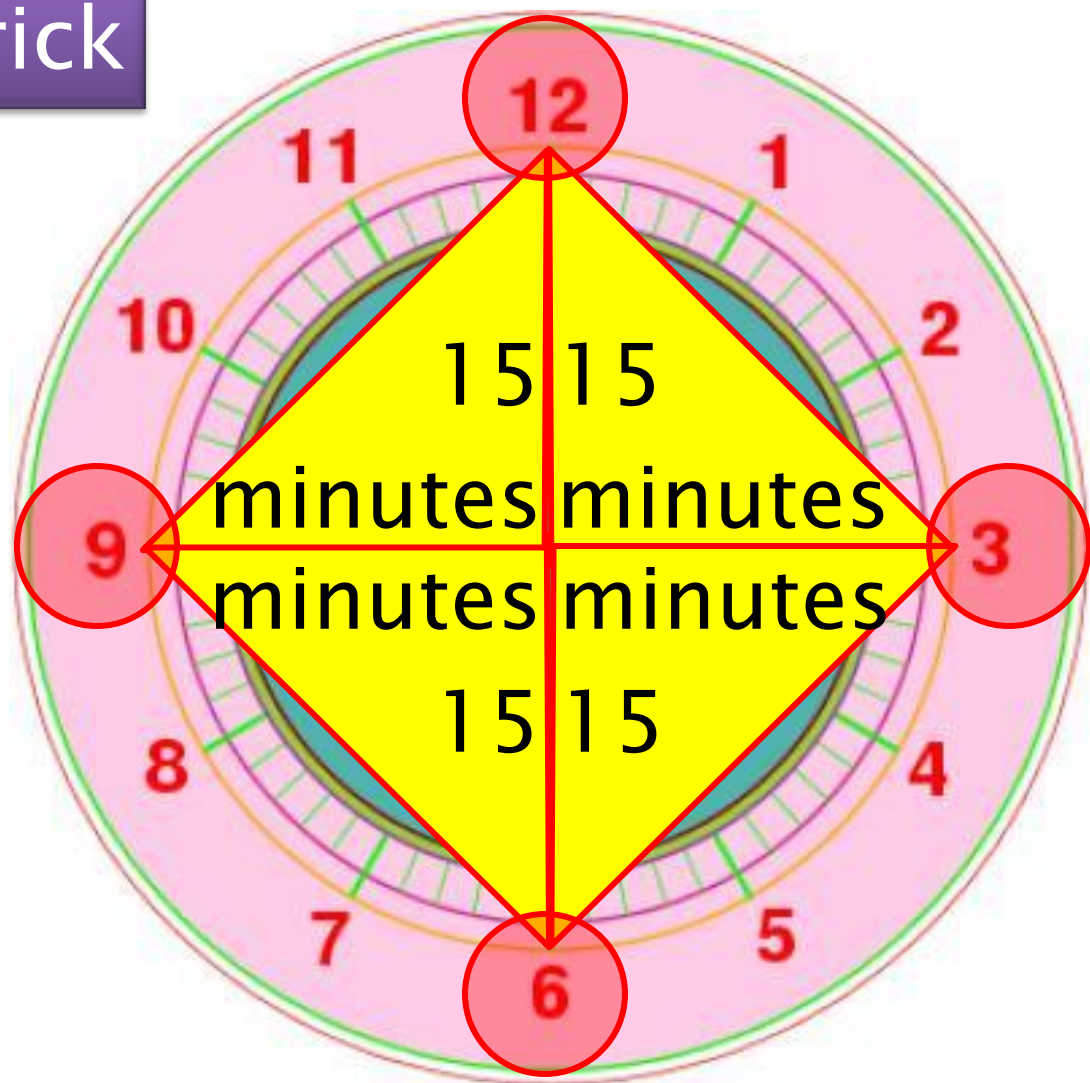


Parts of a Clock

A Quick Minute Trick

There are 60 minutes in an hour. If you divide those 60 minutes by 4, you get 4 **quarter hours** of 15 minutes each.

If you divide the clock into quarter sections, you can see 15 minute increments.





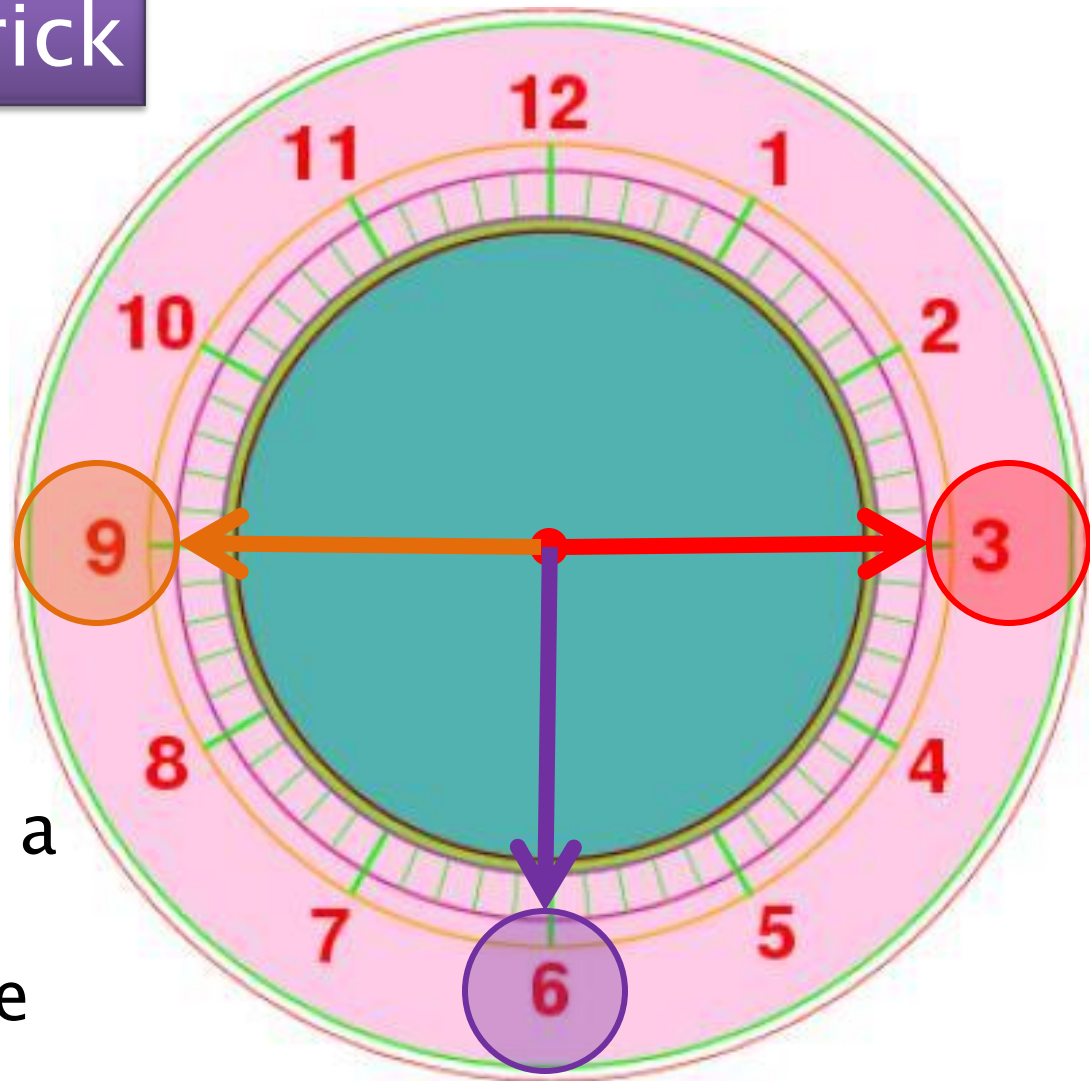
Parts of a Clock

A Quick Minute Trick

A **quarter past** means the big hand is pointing at the first quarter mark.

A **half past** means the big hand is halfway around the clock.

A **quarter till** means the big hand only has a quarter of the clock left until it reaches the top.





Converting Time to Decimals

When working with decimals, we base our numbers off of 1.00.

A quarter hour is written as 0.25, a half hour is written as 0.50, and three-quarters of an hour is written as 0.75.

To put it simply:

15 minutes = 0.25 hours
30 minutes = 0.50 hours
45 minutes = 0.75 hours
60 minutes = 1.00 hour



Converting Time to Decimals

For example:

3:00 is written as 3.00

3:15 is written as 3.25

3:30 is written as 3.50

3:45 is written as 3.75



Converting Time to Decimals

Now you try. Convert these times to decimals:

$$6:30 =$$

$$9:15 =$$

$$1:45 =$$

$$4:00 =$$



Converting Time to Decimals

Now you try. Convert these times to decimals:

$$6:30 = 6.5$$

$$9:15 = 9.25$$

$$1:45 = 1.75$$

$$4:00 = 4.00$$



Calculating Hours Worked

When wages are calculated, they are figured down to the quarter hours.

If you work from 9:00 am until 3:22 pm, how long did you work?



Calculating Hours Worked

When wages are calculated, they are figured down to the quarter hours.

If you work from 9:00 am until 3:22 pm, how long did you work?

6 hours 22 minutes rounded down to

6 hours 15 minutes

= **6.25** (because 15 minutes is a quarter of an hour)



Wait a minute???

Why did 3:22 round down to 3:15, or 3.25 hours?



Wait a minute???

Why did 3:22 round down to 3:15, or 3.25 hours?

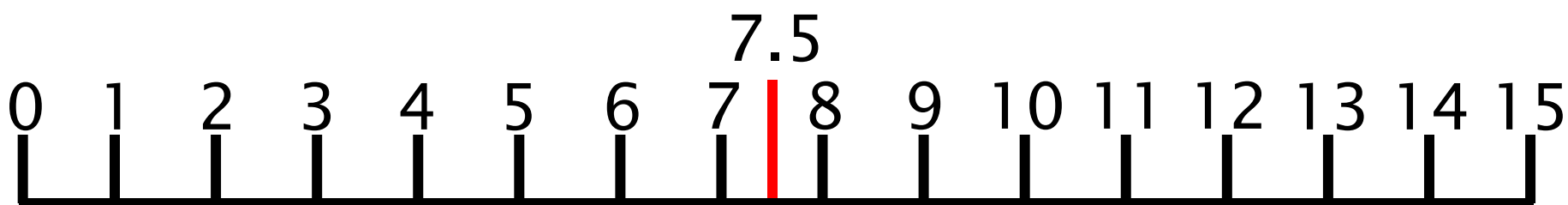
To begin with, the easiest way to convert time to decimals is to work with quarter hours, so we will round all time to the nearest 15 minutes.

For the purpose of this class, round the times to the nearest quarter hour before you do the math to calculate how many hours were worked.



Rounding Time

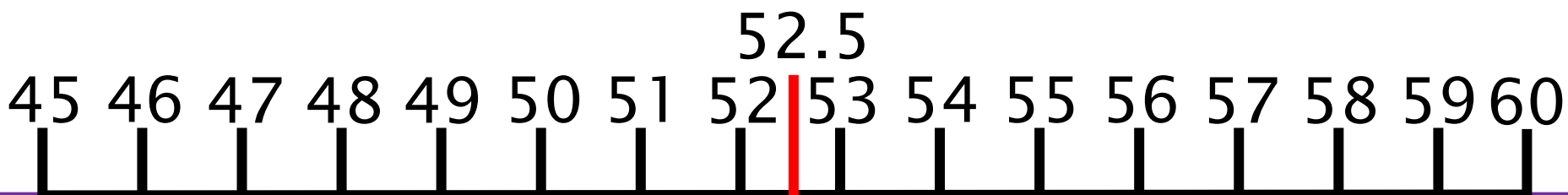
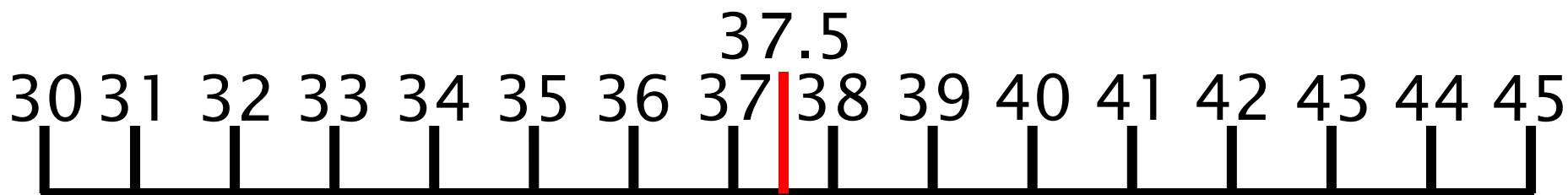
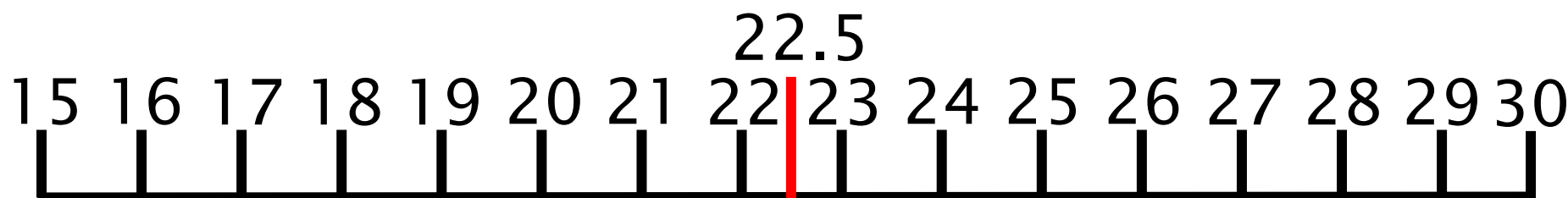
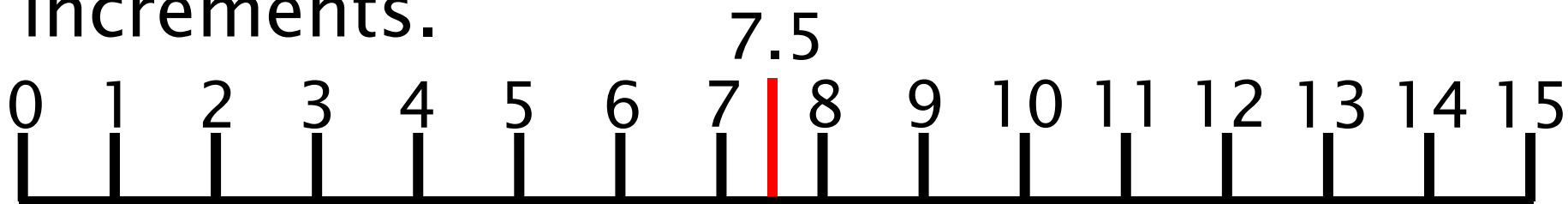
Consider a number line based on 15. Where does the line divide for rounding? In the middle. If the time is less than the middle number, we round down. If it is the same, or more than, the middle number, we round up.





Wait a minute???

The same rule works for all 15 minute increments.



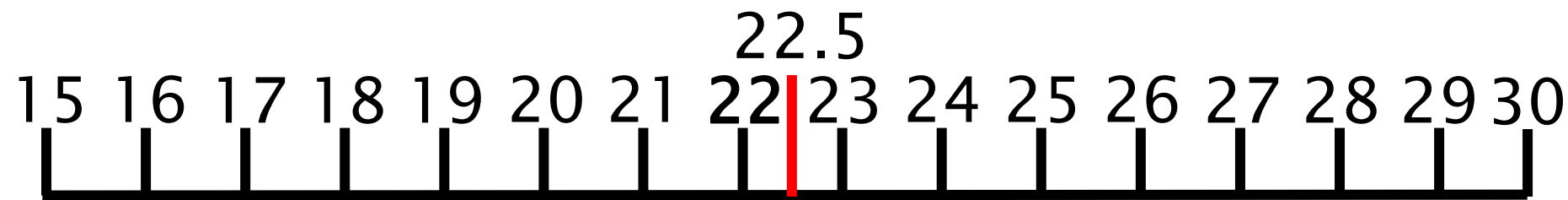


Rounding to the Quarter Hour

So, back to our 8 hours and 22 minutes.

Is 22 closer to the 15 or to the 30?

Use the red middle marker to guide you.



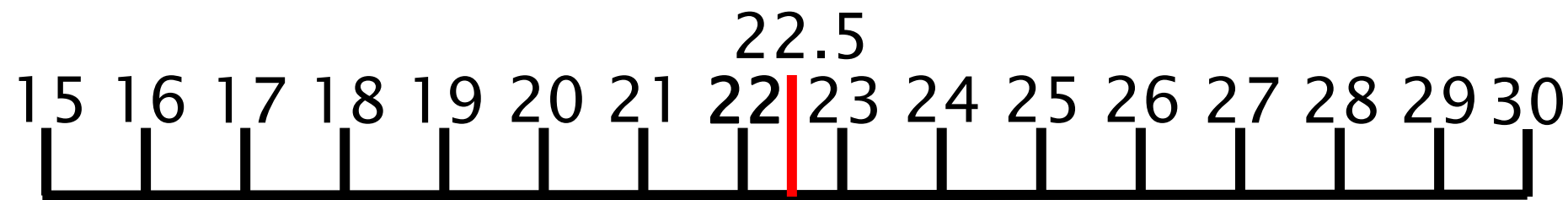


Rounding to the Quarter Hour

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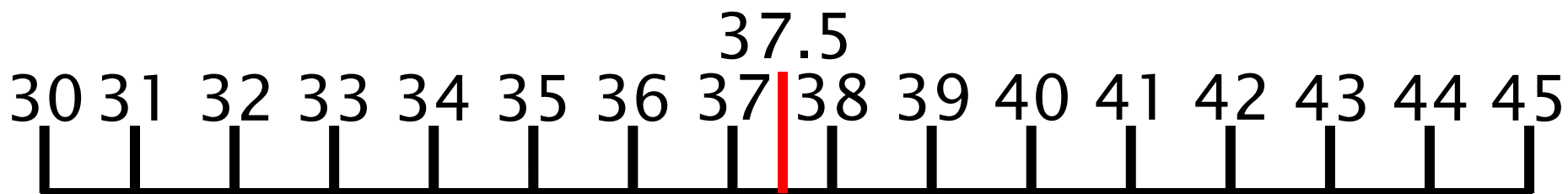
Because 22 is closer to the 15, we round it down to 15.



Wait a minute???

Let's try a few more:

4 hours and 38 minutes would round to...

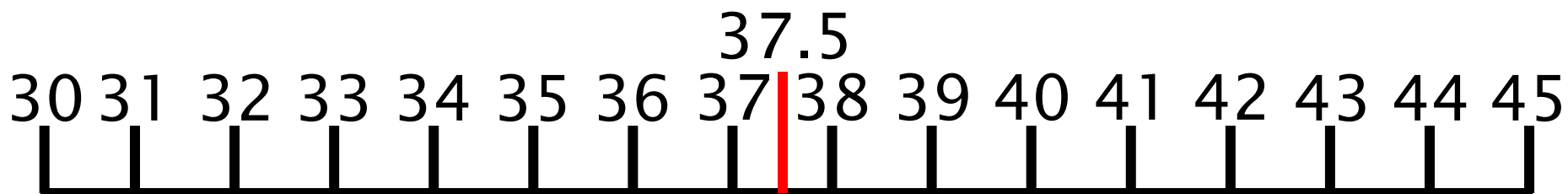




Wait a minute???

Let's try a few more:

4 hours and 38 minutes would round to...



4:45 (decimal form: 4.75)

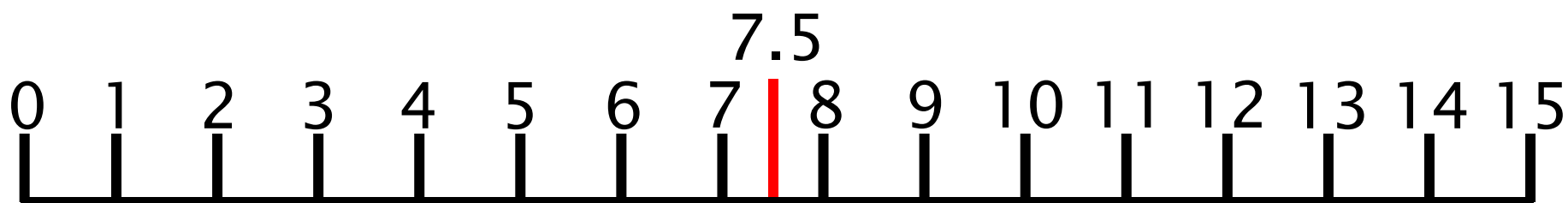
**The :38 is higher than :37.5
so you should round up to 45.**



Wait a minute???

Let's try a few more:

10 hours and 6 minutes would round to...

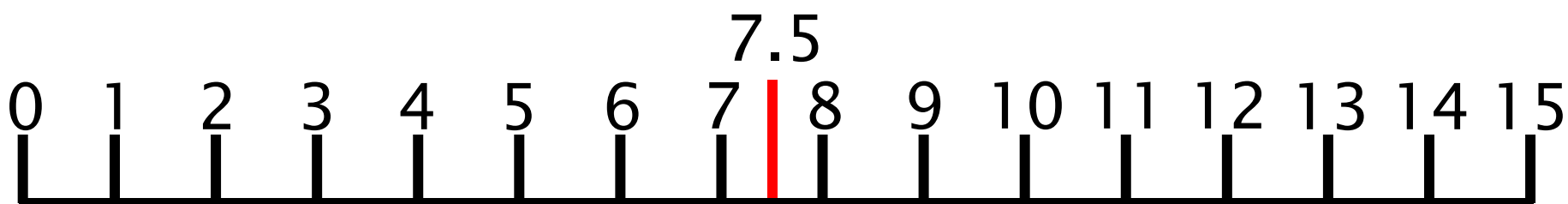




Wait a minute???

Let's try a few more:

10 hours and 6 minutes would round to...



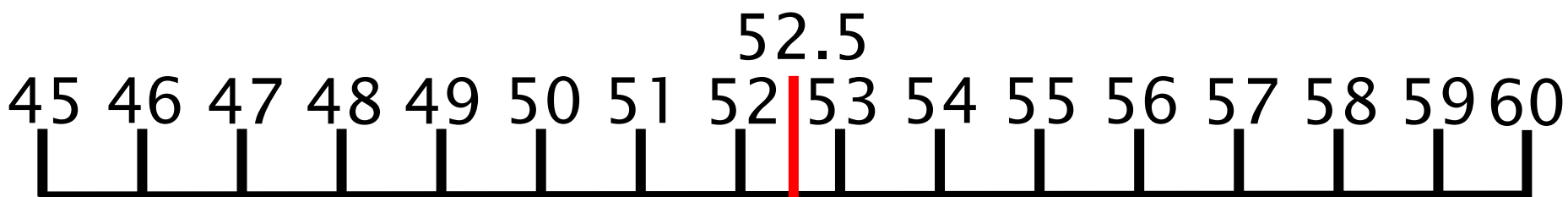
10:00 (decimal form: 10.00)
The :06 is lower than :07.5
so you should round down to 0.



Wait a minute???

Let's try a few more:

1 hours and 58 minutes would round to...

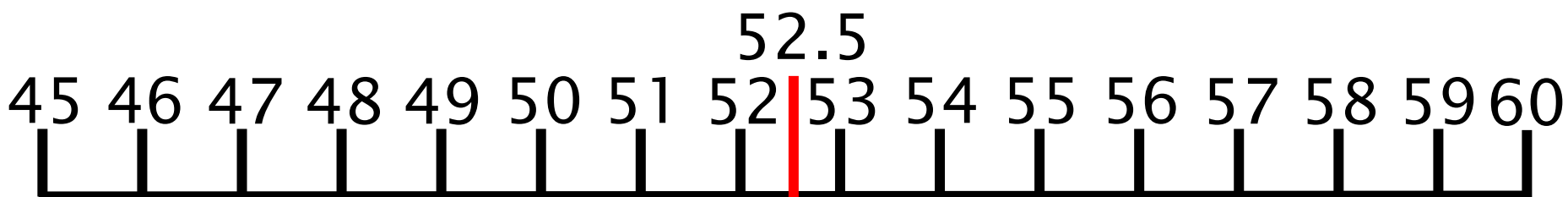




Wait a minute???

Let's try a few more:

1 hours and 58 minutes would round to...



2:00 (decimal form: 10.00)

**The :58 is higher than :52.5
so you should round up 1.00 hour.**



Calculating Hours Worked

See if you can calculate how many hours these people worked. Don't forget to round your answer.

Complete the table shown:						
		AM		PM		TOTAL HOURS
		IN	OUT	IN	OUT	
1	Harrison	7:30 AM	11:30 PM	1:00 PM	5:30 PM	
2	Kaitlynn	9:00 AM	12:00 PM	1:00 PM	5:15 PM	
3	Samuel	8:00 AM	12:30 PM	1:00 PM	4:30 PM	
4	Kaylee	6:00 AM	12:00 PM	2:00 PM	6:00 PM	
5	Wesley	10:00 AM	12:00 PM	1:00 PM	5:30 PM	
6	Rayanna	9:00 AM	12:30 PM	2:00 PM	7:00 PM	
7	Jonathan	8:30 AM	12:30 PM	1:30 PM	5:25 PM	
8	Jessika	7:00 AM	12:00 AM	1:00 PM	4:06 PM	
9	Michael	10:30 AM	3:00 PM	4:30 PM	9:21 PM	
10	Hunter	3:30 AM	8:00 AM	9:00 AM	2:03 PM	
11	Keith	9:15 AM	12:00 PM	3:15 PM	6:22 PM	
12	Madelle	11:08 AM	12:00 PM	3:15 PM	7:11 PM	



Calculating Hours Worked

See if you can calculate how many hours these people worked. Don't forget to round your answer.

Complete the table shown:						
		AM		PM		TOTAL HOURS
		IN	OUT	IN	OUT	
1	Harrison	7:30 AM	11:30 PM	1:00 PM	5:30 PM	8:30 or 8.50
2	Kaitlynn	9:00 AM	12:00 PM	1:00 PM	5:15 PM	7:15 or 7.25
3	Samuel	8:00 AM	12:30 PM	1:00 PM	4:30 PM	8:00 or 8.00
4	Kaylee	6:00 AM	12:00 PM	2:00 PM	6:00 PM	10:00 or 10.00
5	Wesley	10:00 AM	12:00 PM	1:00 PM	5:30 PM	6:30 or 6.50
6	Rayanna	9:00 AM	12:30 PM	2:00 PM	7:00 PM	8:30 or 8.50
7	Jonathan	8:30 AM	12:30 PM	1:30 PM	5:25 PM	7:00 or 8.00
8	Jessika	7:00 AM	12:00 AM	1:00 PM	4:06 PM	8:00 or 8.00
9	Michael	10:30 AM	3:00 PM	4:30 PM	9:21 PM	9:30 or 9.50
10	Hunter	3:30 AM	8:00 AM	9:00 AM	2:03 PM	9:30 or 9.50
11	Keith	9:15 AM	12:00 PM	3:15 PM	6:22 PM	5:45 or 5.75
12	Madelle	11:08 AM	12:00 PM	3:15 PM	7:11 PM	4:45 or 4.75



Calculating Hours Worked

Now see if you can calculate regular time and overtime:

Complete the table shown:				
		Total Hours	Regular Time	Overtime
1	Harrison	8.50	8	0.5
2	Kaitlynn	7.25		
3	Samuel	8.00		
4	Kaylee	10.00		
5	Wesley	6.50		
6	Rayanna	8.50		
7	Jonathan	8.00		
8	Jessika	8.00		
9	Michael	9.50		
10	Hunter	9.50		
11	Keith	5.75		
12	Madelle	4.75		



Calculating Hours Worked

Now see if you can calculate regular time and overtime:

Complete the table shown:				
		Total Hours	Regular Time	Overtime
1	Harrison	8.50	8	0.5
2	Kaitlynn	7.25	7.25	0
3	Samuel	8.00	8	0
4	Kaylee	10.00	8	2
5	Wesley	6.50	6.5	0
6	Rayanna	8.50	8	0.5
7	Jonathan	8.00	8	0
8	Jessika	8.00	8	0
9	Michael	9.50	8	1.5
10	Hunter	9.50	8	1.5
11	Keith	5.75	5.75	0
12	Madelle	4.75	4.75	0



Review:

1. What does the big hand on a clock point to?
2. How many minutes are in an quarter hour?
3. If you worked from 9:00am until 5:37pm, how long did you work? (round to the quarter hour)



Review:

1. What does the big hand on a clock point to?

Minutes in an hour.

2. How many minutes are in an quarter hour?

15

3. If you worked from 9:00am until 5:37pm, how long did you work? (round to the quarter hour)

8:30 or 8.50 hours