NAME _____

Cancerous Cells

Examine the chart below and answer the questions.

	Minutes for mitosis to occur	
	Normal Chicken cells	Cancerous chicken cells
Interphase	540	380
Prophase	60	45
Metaphase	10	10
Anaphase	3	3
Telophase / cytokinesis	12	10

1. What is the total number of minutes for normal chicken cells to reproduce? _____
   a. Hours? _____
2. What is the total number of minutes for cancerous chicken cells to reproduce? _____
   a. Hours? _____
3. List several reasons why normal chicken cells take longer to reproduce.

4. Predict how long a chicken will live after the cancer cells first begin.

5. As an oncologist, how could you relate this information to humans (rate, research, etc.)?

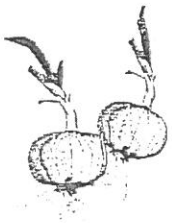
Minutes for mitosis to occur

Cells	Prophase	Metaphase	Anaphase	Telo/Cyto	Total
Salamander kidney cells	90	50	6	70	
Pea root cells	70	40	4	12	

1. Add up and fill in the total box.
2. Explain why kidney cells require more time to reproduce.

3. Predict which cells could mutate and become cancerous more quickly.

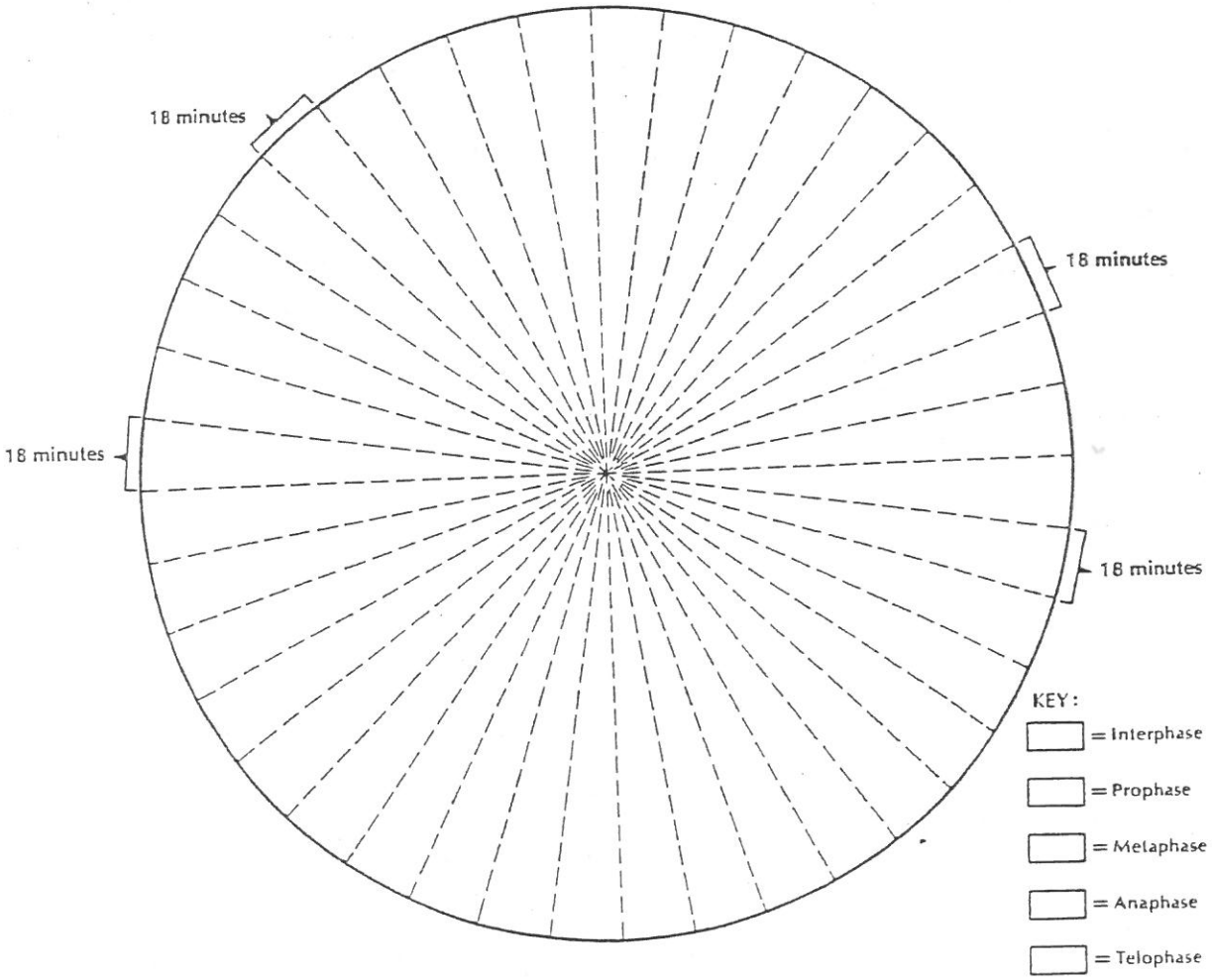
Onion cells require a total time of 12 hours (720 minutes) to complete mitosis. Below is data from an onion root completing mitosis. Calculate and complete the data chart, complete the pie chart, and answer the questions.



Onion root cell completing mitosis

Phase	Cells	time in minutes
Interphase	816	
Prophase	102	
Metaphase	20	
Anaphase	14	
Telophase	28	

$\frac{\#\text{ of cells in phase}}{\text{Total \# of cells}} \times 720$



1. Which phase of the cell cycle in the onion root is the longest? _____
2. What important changes are occurring in the cell that would validate this length?

NAME _____

Cancerous Cells

Examine the chart below and answer the questions.

	Minutes for mitosis to occur	
	Normal Chicken cells	Cancerous chicken cells
Interphase	540	380
Prophase	60	45
Metaphase	10	10
Anaphase	3	3
Telophase / cytokinesis	12	10

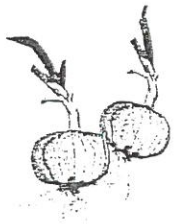
1. What is the total number of minutes for normal chicken cells to reproduce? 625 min
   a. Hours? 10.4 hrs
2. What is the total number of minutes for cancerous chicken cells to reproduce? 448 min
   a. Hours? 7.5 hrs
3. List several reasons why normal chicken cells take longer to reproduce. They don't need to
   - produce dead cells -> replace
   - stress
4. Predict how long a chicken will live after the cancer cells first begin. 7-8 yrs total
   4-5 yrs
5. As an oncologist, how could you relate this information to humans (rate, research, etc.)?
   cell ÷ occurs faster - life span
   - therapies?
   - same rate?

Minutes for mitosis to occur

Cells	Prophase	Metaphase	Anaphase	Telo/Cyto	Total
Salamander kidney cells	90	50	6	70	216 min
Pea root cells	70	40	4	12	126 min

1. Add up and fill in the total box.
2. Explain why kidney cells require more time to reproduce.
3. Predict which cells could mutate and become cancerous more quickly. root cells

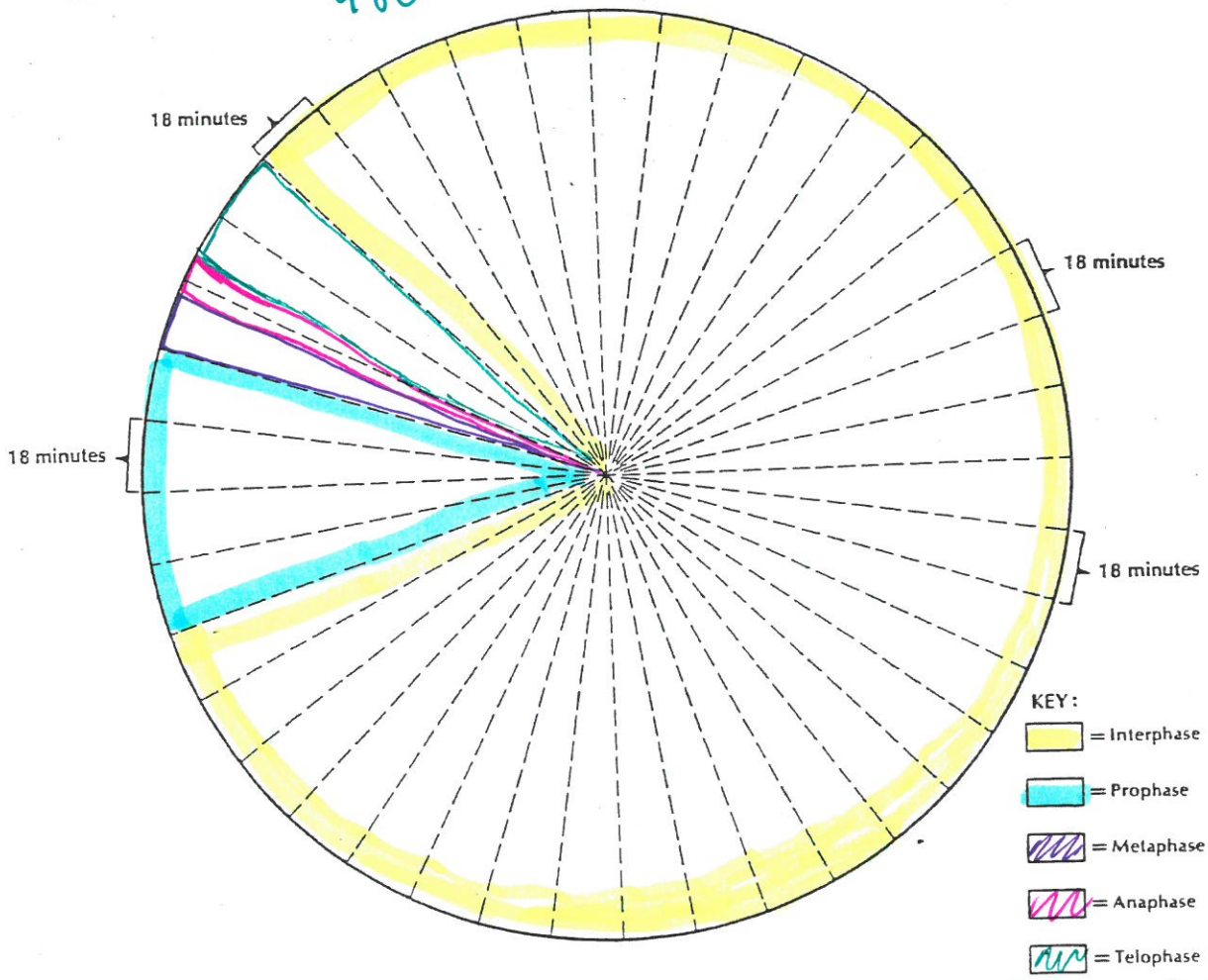
Onion cells require a total time of 12 hours (720 minutes) to complete mitosis. Below is data from an onion root completing mitosis. Calculate and complete the data chart, complete the pie chart, and answer the questions.



Onion root cell completing mitosis

Phase	Cells	time in minutes
Interphase	816	600 min
Prophase	102	75 min
Metaphase	20	15 min
Anaphase	14	10 min
Telophase	28	21 min
	980	

$$\frac{\#\text{ of cells in phase}}{\text{Total \# of cells}} \times 720$$



1. Which phase of the cell cycle in the onion root is the longest? Interphase
2. What important changes are occurring in the cell that would validate this length?