EXPLORATIONS

Activity 9

Titanic Tales

Teacher Notes

Concept

- Percents and circle graphs
- Number Sense
- Measurements, Statistics

Skill

- Finding percents
- Creating circle graphs to accurately represent data
- Identifying graphs as misleading, when appropriate

Applicable Calculator Functions

- [▸OP1], [OP1], [▸OP2], [OP2], [▸D], [FIX]

Materials

- Student Activity Sheets (page 82)
- Straight edge
- Colored pencils, markers or crayons
- TI-30X IIS/TI-34 II calculator

Objective

- Students will interpret graphs, find percentages, and create circle graphs to display data

Prerequisites

Prior to this activity, students should have experience finding percentages. They should have some experience with circle graphs and they should be familiar with or taught the use of the [OP1] and [OP2] keys on the TI-34 II calculator (the [K] key on the TI-30X IIS).

Problem

The task is to study the data provided about the Titanic disaster. Students will look at the table and bar graphs containing the data and answer the various questions. They will construct circle graphs to display some of the data and determine whether those circle graphs together or separately are misleading.

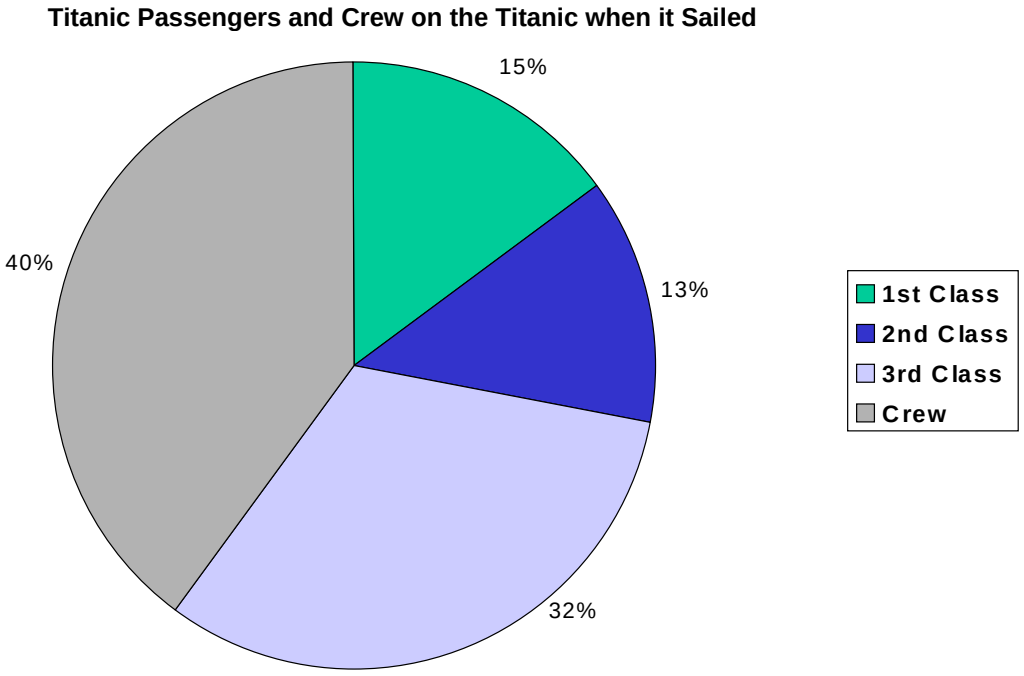
Activity

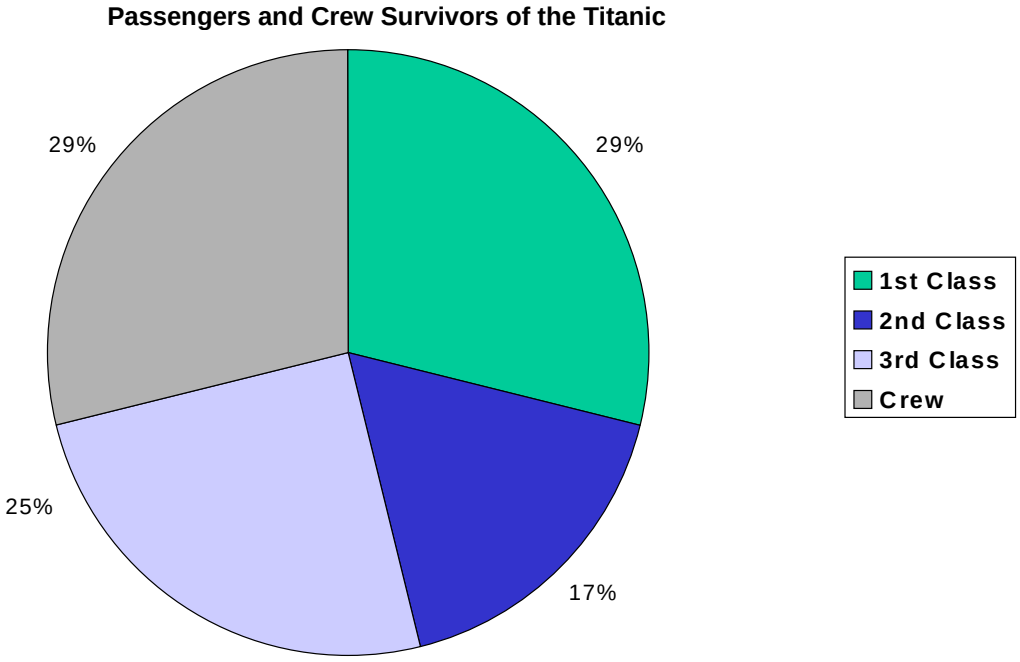
Briefly discuss the Titanic disaster with students. Explain that the data provided in this activity was compiled shortly after the accident. Discuss how graphs may be misleading — that is, they create a visual image that gives an impression different from the situation the data actually represents.

Have students work in pairs to answer the questions below both the table and bar graphs on their activity sheets. Check to be sure all students can find percentages correctly (for example, questions 1C and 1F).

Next, the students should complete the percent charts provided and create circle graphs using the calculations they produce. Note that a protractor is not necessary unless precise graphs are desired.

Possible Circle Graphs





Wrap-Up

After checking the circle graphs, ask the students to answer the final set of questions and determine whether one or both of their graphs are misleading. They should conclude that the second circle graph could be misleading, especially if viewed alone. A person unfamiliar with the data presented in the first graph would think the survivors contained a disproportionately large number of members of the crew and, likewise, that there must have been few third class passengers on board when the Titanic set sail.

Assessment

Student explanations about why the second circle graph is misleading can serve to assess their understanding of this activity.

Extension

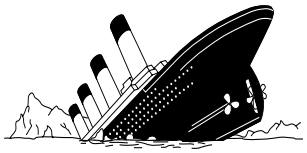
Have students create their own circle graphs to display information about the Titanic disaster and explain whether their graph is misleading.

Student Activity

Name _____

Date _____

Activity 9



Titanic Tales

Objective: *You will interpret graphs, find percentages, and create circle graphs to display data.*

	Male Adults		Female Adults		Male Children		Female		Total	
	Before	After	Before	After	Before	After	Before	After	Before	After
1st	175	57	144	140	5	5	1	1	325	203
2nd	168	14	93	80	11	11	13	13	285	118
3rd	462	75	165	76	48	13	31	14	706	178
Crew	862	192	23	20	0	0	0	0	885	212
Total	1667	338	425	316	64	29	45	28	2201	711

Problem

1. Look at the Titanic data provided in the table above. Answer the following questions.

a. What was the total number of people on the ship before the disaster?

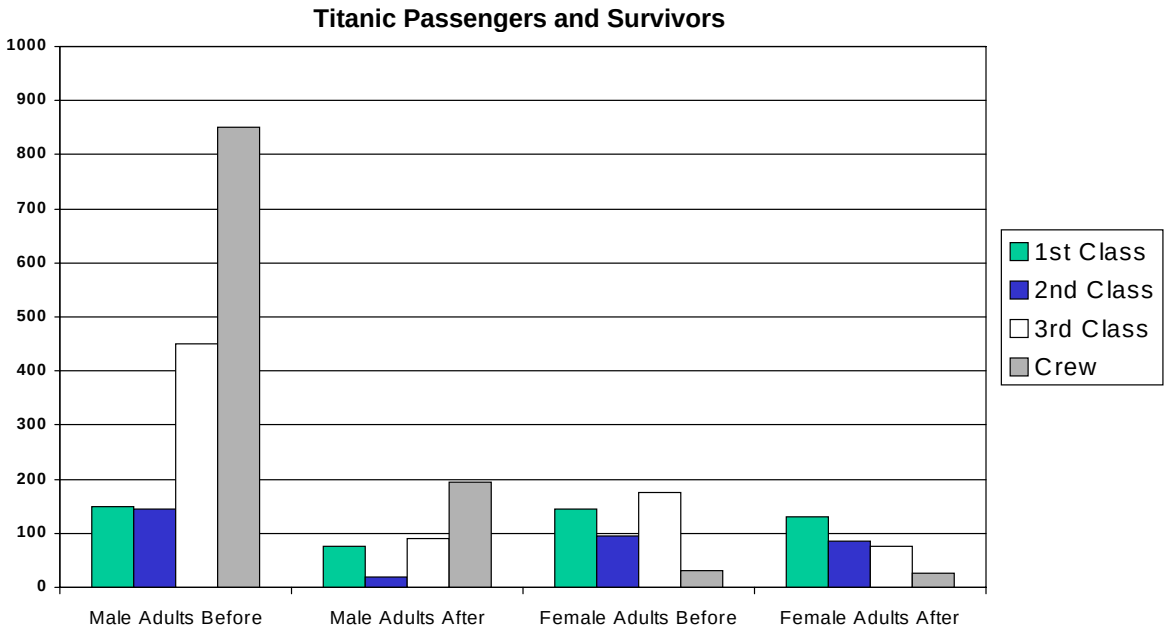
b. What was the total number of people who survived the disaster?

c. What percent of the people survived?

d. How many children were on the ship before the accident?

e. What was the total number of children who survived the disaster?

f. What percent of children survived?

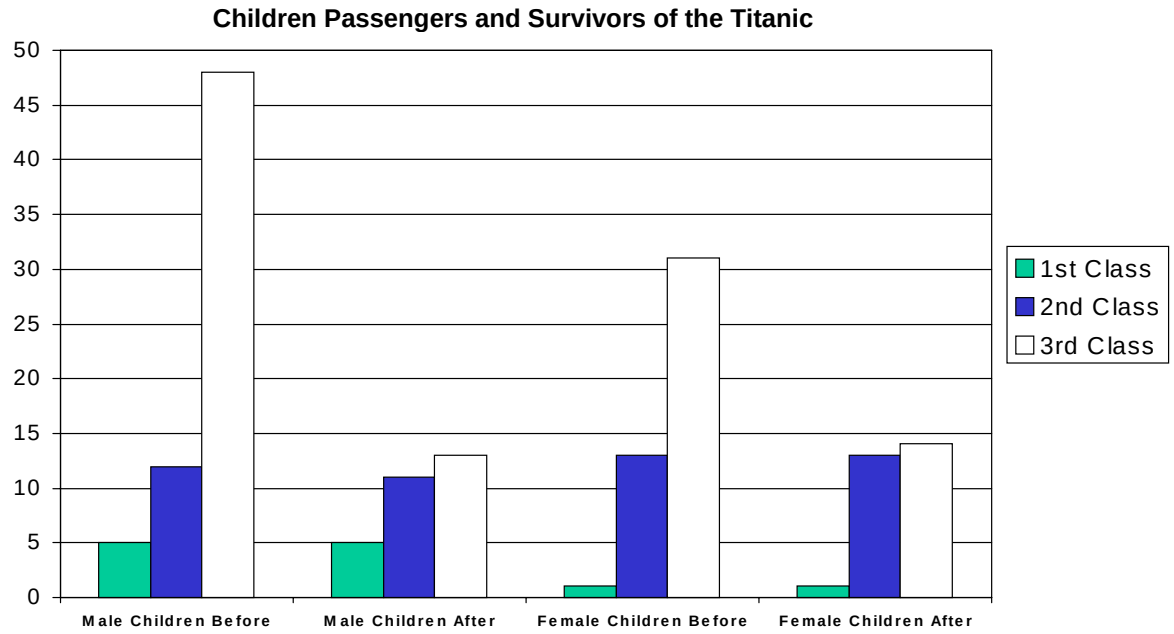


2. Answer the following questions by observing the bar graph above.

a. Which class (1st, 2nd, 3rd or crew) had the most females surviving the Titanic?

b. Which class (1st, 2nd, 3rd or crew) had the most males aboard before the sinking?

c. Were there more male adults or female adults aboard the ship before its sinking?



3. Answer the following questions by observing the bar graph above.

a. Which class (1st, 2nd, 3rd or crew) had the most children aboard before the sinking?

b. Which class (1st, 2nd, 3rd or crew) had the most children surviving the Titanic?

c. Were there more male adults or female children aboard the ship before it sank?

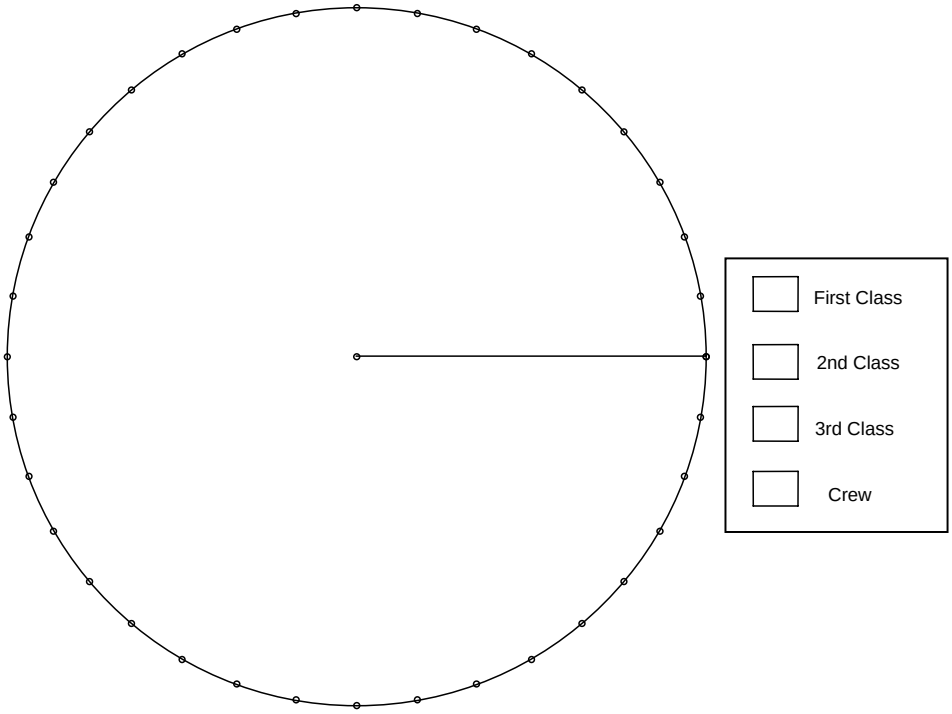
4. Complete the tables below and use the information to create circle graphs to display the percent of the Titanic population by class on the ship before and after the accident.

Titanic Passengers	Passengers Before	Percent of Total Passengers in the Nearest Hundreth Percent	Percent of Total Passengers to the Nearest Whole Percent	∠ Measure in Circle Graph
1st class	325			
2nd Class	285			
3rd Class	706			
Crew	885			
Total	**2201**			

Titanic Survivors	Survivors After	Percent of Total Survivors in the Nearest Hundreth Percent	Percent of Total Survivors to the Nearest Whole Percent	∠ Measure in Circle Graph
1st class	203			
2nd Class	118			
3rd Class	178			
Crew	212			
Total	**711**			

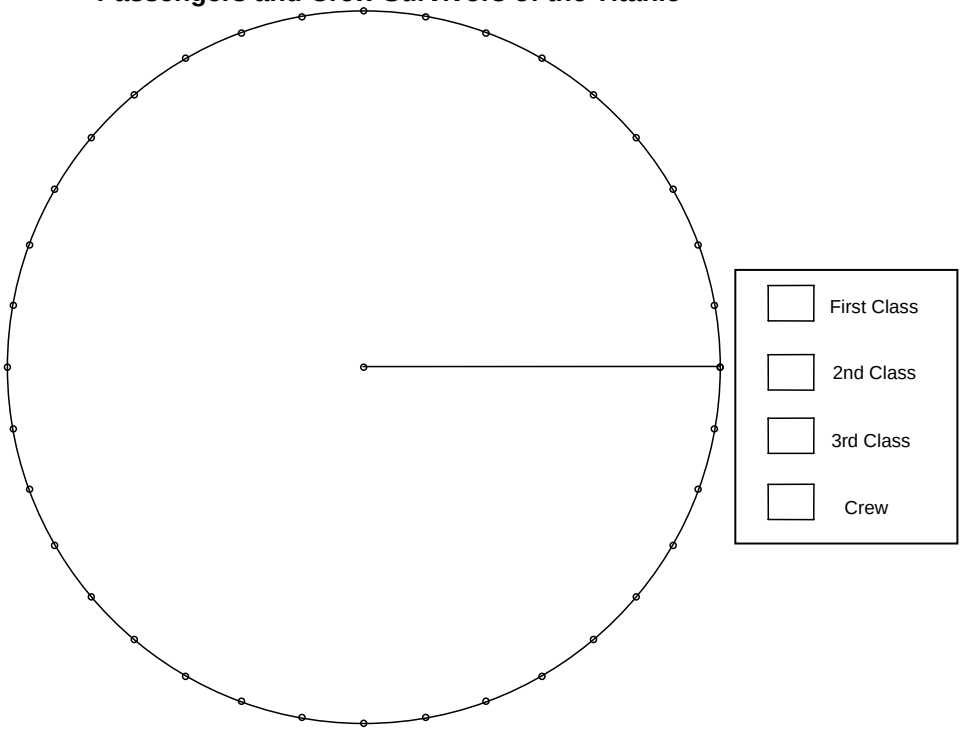
5. The circles below are marked every ten degrees. Use the markings and a straight edge to construct a circle graph below that shows the percent of the Titanic population by class on the ship before the accident.

Titanic Passengers and Crew on the Ship When It Sailed



Construct a circle graph below to show the percent of the Titanic population by class of the survivors of the Titanic disaster.

Passengers and Crew Survivors of the Titanic



6. Look at the Titanic information provided in your circle graphs. Answer the following questions:

a. List in order from greatest to least the percent of total passengers for each class of passengers and the crew on the Titanic when it set sail

b. List in order from greatest to least the percent of total survivors for each class of passengers and the crew from the Titanic.

c. One of the circle graphs is misleading when viewed by itself. Which one and why?

Titanic Tales
Keystrokes for the TI-34 II

Example: *325 passengers is what percent of 2201?*

PRESS	DISPLAY
2nd [FIX]	F 0 1 2 3 4 5 6 7 8 9
▶ to 2	F 0 1 2 3 4 5 6 7 8 9
ENTER	FIX
2nd [▸OP1]	OP1 = (press CLEAR if needed) FIX
÷ 2201 ENTER	OP1 = ÷ 2201 FIX
2nd [▸OP2]	OP2 = (press CLEAR if needed)
× 100 ENTER	OP2 = X 100 FIX
325	325 FIX

PRESS	DISPLAY
[OP1]	325 ÷ 2201 1 0.15 FIX
[OP2]	0.14760154 1 14.77 FIX

To change the percent to nearest whole number percent, follow the same instructions as above except set [FIX] to 0.

Titanic Tales
Keystrokes for the TI-34 II

Example: *Find angle, measure in a circle graph to represent 325 out of 220 passengers.*

PRESS	DISPLAY
[2nd] [FIX]	F 0 1 2 3 4 5 6 7 8 9
⊙ to 0	F 0 1 2 3 4 5 6 7 8 9
[ENTER]	FIX
[2nd] [▸OP1]	OP1 = (press [CLEAR] if needed) FIX
[÷] 2201 [ENTER]	OP1 = ÷ 2201 FIX
[2nd] [▸OP2]	OP2 = (press [CLEAR] if needed)
[×] 360 [ENTER]	OP2 = X 360 FIX
325	325 FIX

PRESS	DISPLAY
[OP1]	325 ÷ 2201 1 0 FIX
[OP2]	0.1476601544752 x 360 1 53 FIX

Note: To change back to floating decimal, press [2nd] [FIX] and use ◀ to underline F.

Titanic Tales
Keystrokes for the TI-30X IIS

Example: *325 passengers is what percent of 2201?*

PRESS	DISPLAY
[2nd] [FIX]	F 0 1 2 3 4 5 6 7 8 9
▶ ▶ ▶	F 0 1 2 3 4 5 6 7 8 9
[ENTER]	FIX DEG
[2nd] [K]	K= (press [CLEAR] if needed) FIX DEG
[÷] 2201 [×] 100 [ENTER]	K = /2201 X 100 FIX DEG K
325 [ENTER]	325/ 2201 X 100 14.77 FIX DEG K

To change the percent to nearest whole number percent, follow the same instructions as above except set [FIX] to 0.

Note: You must clear the constant [K] key when you are finished.

Example: *Find the angle measure in a circle graph to represent 325 out of 220 passengers*

PRESS	DISPLAY
[2nd] [FIX]	F 0 1 2 3 4 5 6 7 8 9
▶ to 0	F 0 1 2 3 4 5 6 7 8 9
[ENTER]	FIX DEG
[2nd] [K]	K = (press [CLEAR] if needed) FIX DEG
[÷] 2201 [×] 360 [ENTER]	K = /2201 x 360 FIX DEG K
325 [ENTER]	325 / 2201 x 360 53 FIX DEG K

Note: To change back to floating decimal, press [FIX] and use ◀ to underline F.