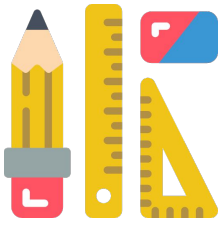
Helping With Math

Displaying Line Plots

GRADE 4

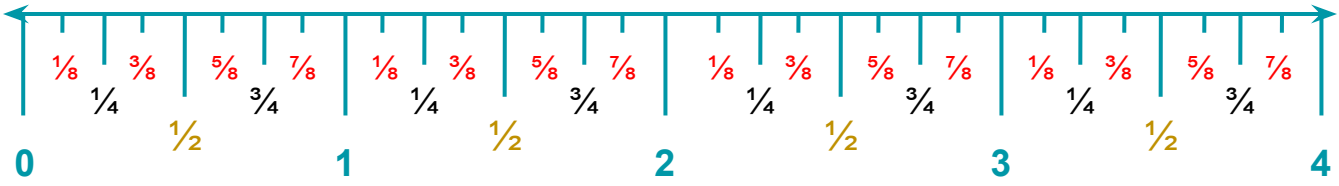
A line plot is a graph that displays the how many of a particular data is occurring along a number line. Line plots give a fast and easy way to organize data.

Hi! I am Engineer Elmer and we are here on the construction site. In our field, measurement is very important. Can you help us measure and organize our data?



CONSTRUCTING LINE PLOTS

LINE PLOTS WITH FRACTIONAL UNITS (½ , ¼ , and ⅛)



Note:

- The numbers in blue green color are whole numbers.
- The numbers in dark yellow color are ½ units.
- The numbers in black color are ¼ units.
- The numbers in red color are ⅛ units.

In constructing line plots, (x) mark is used to plot the measurement of an object or the data value being considered. Look at Figure A as an example.

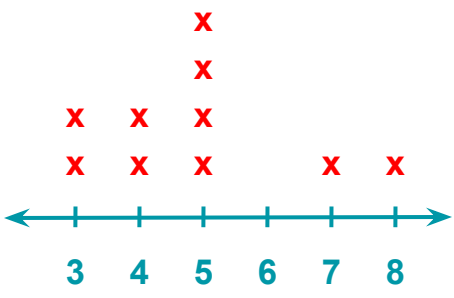


Figure A

Interpretation:

- 3 has a frequency of two, meaning, it occurred twice.
- 4 occurred two times.
- 5 has the highest frequency.

ILLUSTRATING LINE PLOTS

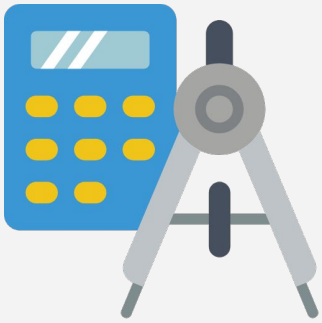
Engr. Elmer did an inventory of metal rods. He measured 15 pieces of metal rods. His findings, in feet, are given below.

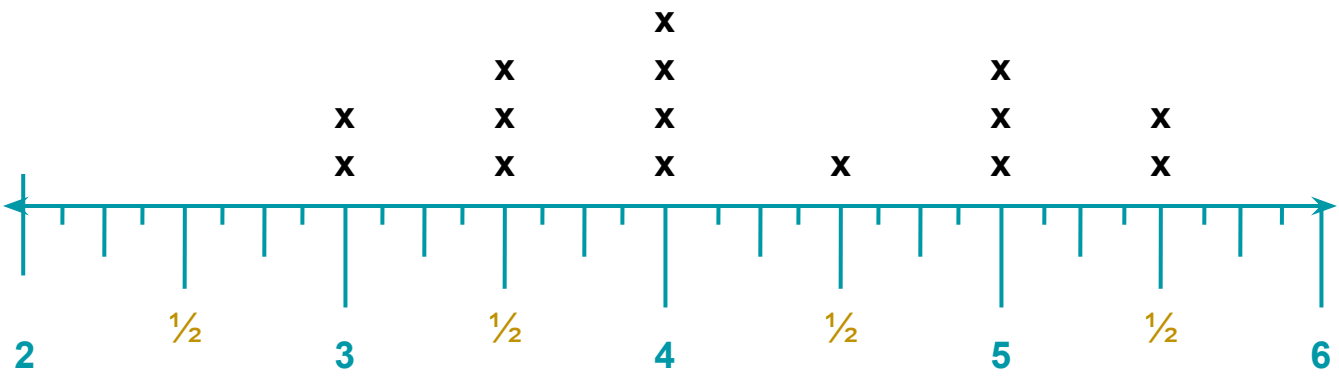
3 ½	4	5 ½	5 ½	3 ½
4	4 ½	5	3	4
5	5	3 ½	4	3

Illustrate his findings using a line plot.

Solution:

- Since the measurements are composed of whole numbers and ½ units, construct a line plot with ½ units.
- Tally the given data:
  - 3 - occurred twice
  - 3 ½ - occured thrice
  - 4 - occured four times
  - 4 ½ - occurred once
  - 5 - occurred thrice
  - 5 ½ - occurred twice





Line Plot of Metal Rod Lengths in ft

ILLUSTRATING LINE PLOTS

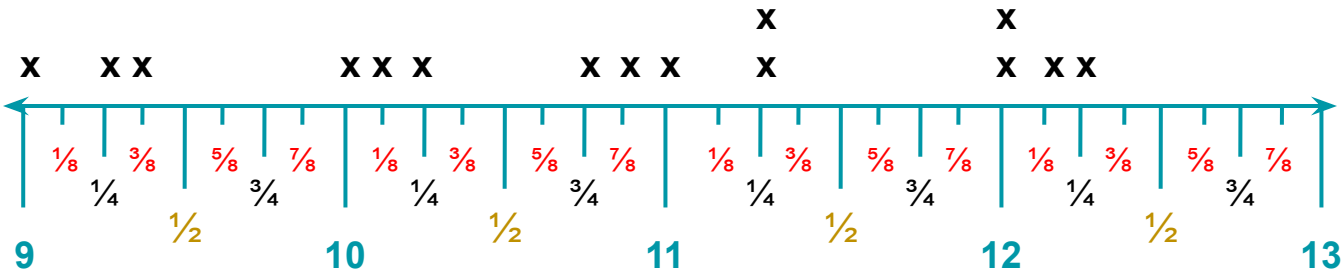
Engr. Elmer received a bundle of delivered blocks. He got the weight of the 15 blocks, in lbs. The results are given below.

10 ⅛	9	12	9 ¼	10 ¾
11	11 ¼	12 ⅛	12	12 ¼
9 ⅜	10	11 ¼	10 ⅞	10 ¼

Illustrate his findings using a line plot.

Solution:

- Since the measurements are composed of whole numbers and ¼ units and ⅛ units, construct a line plot with ¼ and ⅛ units.
- Plot the data.



Line Plot of Blocks Weight in lbs

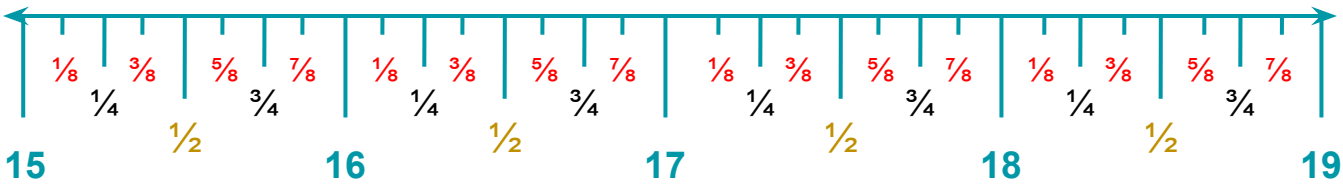
Interpretation:

- Almost all of the values occurred once except 11 ¼ and 12.
- The lowest weight is 9 lbs while the highest is 12 ¼ lbs.
- The difference of the lowest and highest measurement is 3 ¼ lbs.

PRACTICE EXERCISES

Create a line plot to represent the given data below:

15 ⅛	18 ½	16 ½	17 ⅛	15 ⅛	16 ¼	16 ¼
17 ½	18 ½	16 ¼	15 ⅛	17 ⅛	17 ⅛	16 ½
16 ¼	16 ½	15 ⅛	17 ½	18 ½	15 ⅛	15 ⅛



Interpretation:

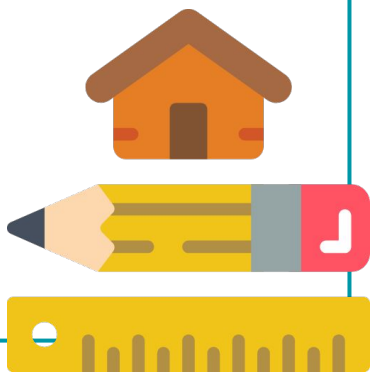
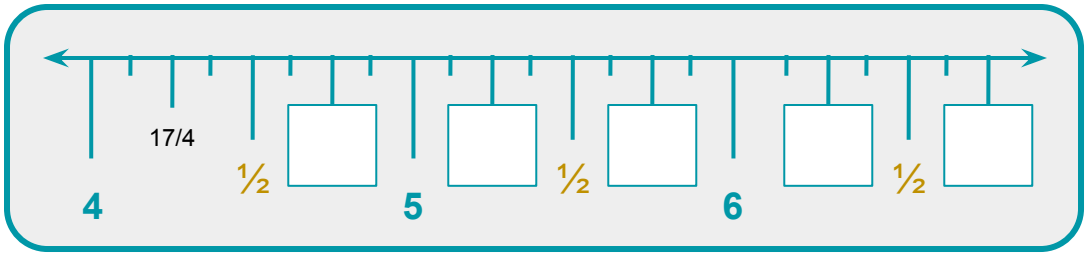


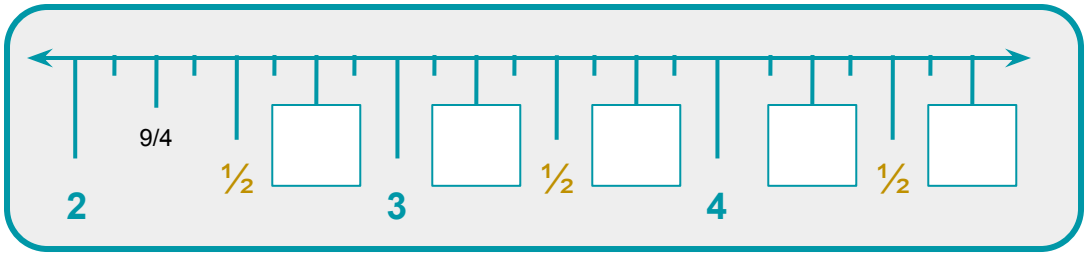
TABLE OF ACTIVITIES

ENGINEER'S NOTE

Engr. Elmer left a note for you. Your task is to complete the number line. Remember: your answer must be improper fractions.



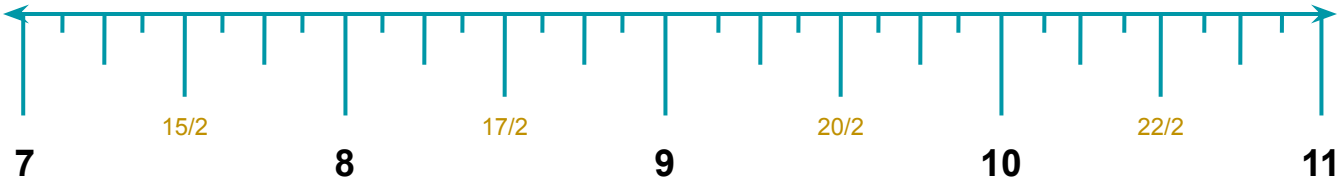
Solution:



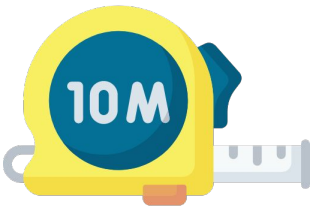
Solution:

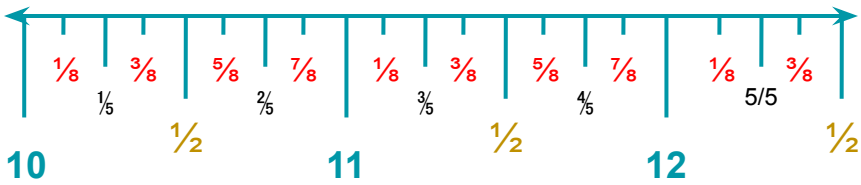
RULER

Measuring tools are vital for engineers. Can you point out what's wrong with these rulers?



1.





2.

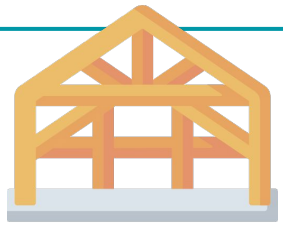
Bonus Question:
What are the reasons why exact measurement is important in constructing building or house?

THE CONSTRUCTION SITE

The person-in-charge of the construction site needs to do an inventory of the available metal rods. These metal rods come with different sizes. Tally these two sets of measurement. Construct a table of values for your findings.

58 ½ in	47 ½ in
47 ½ in	58 ½ in
47 ½ in	58 ½ in
45 ⅔ in	45 ⅔ in
45 ⅔ in	47 ½ in

Tally the metal rods' length. Represent them using your own table of values.



2 ½ m	1 ⅔ m
1 ⅔ m	3 ⅜ m
3 ⅜ m	3 ⅜ m
2 ½ m	1 ⅔ m
2 ½ m	1 ⅔ m

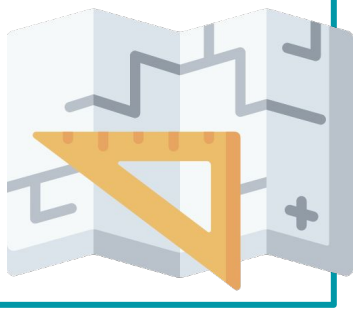
Tally the metal rods' length. Represent them using your own table of values.

THE MISSING BLUEPRINT

Oh no! The building's blueprint is missing! Hurry and create a line plot based on the data given to get a clue of the blueprint's location.

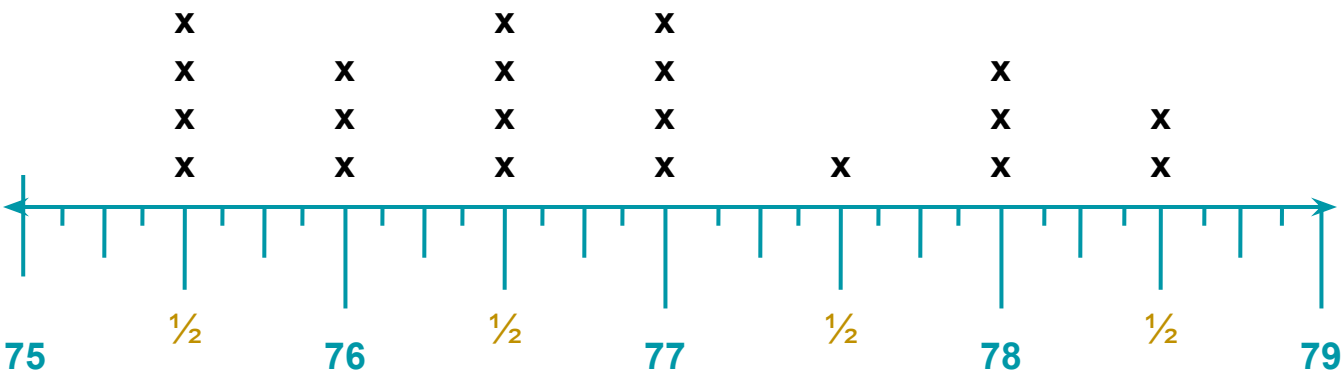
The Weight of the Construction Tools (in lbs)

68 ½	68	70 ½	69 ½	69
69	68 ½	70 ½	69	70 ½
69 ½	69	68 ½	68	69
69 ½	69 ½	68	68 ½	70 ½



HOUSING PROJECT

Engr. Eric has a new housing project. Help him interpret the line plot about the length of wired fence (in feet) needed on each house.

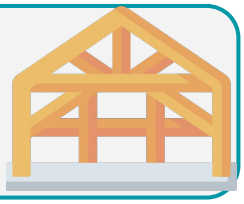


1. How many 76-ft long wires are needed?

2. What length has the lowest frequency?

3. What are the lengths with the same frequency?

4. How many sets of wired fence are needed in all?

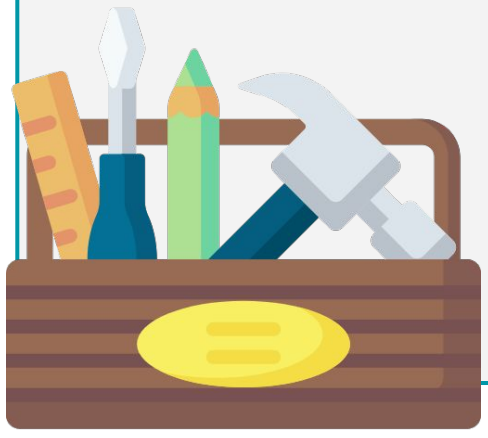


MEASURE AND PLOT

Collect 15 empty bottles/boxes. Make sure that they come in different length. Measure the length of each object then create a line plot to illustrate your findings.

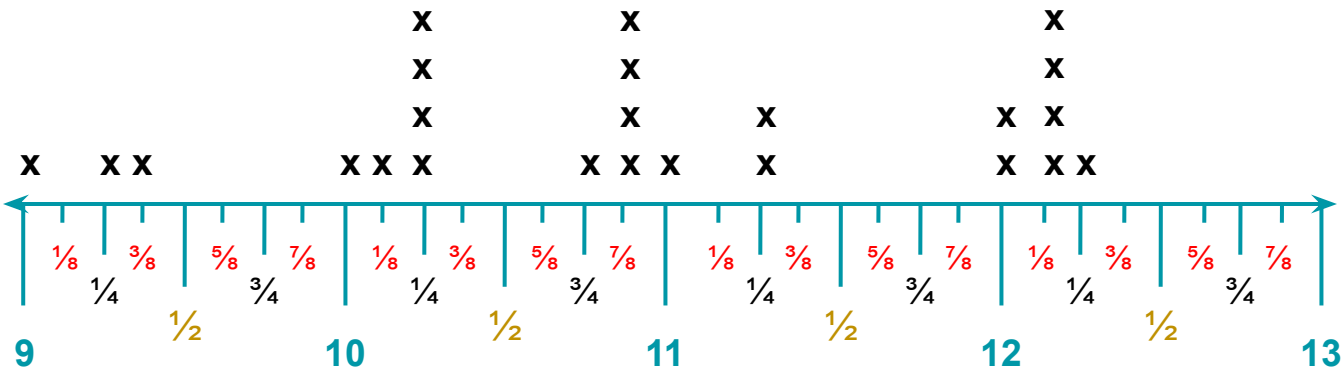
1. Record their measurement (in cm) below.

2. Create your own line plot. Do not forget the label.

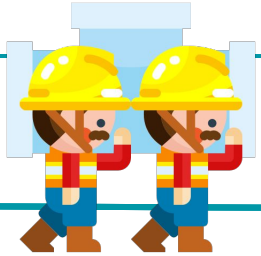


MEN AT WORK

These men are very hardworking. They worked together to do an inventory. Can you tell whether they are saying the truth or not? Write TRUE is they are saying the correct statement. Otherwise, FALSE.



	1. The values with the highest frequency are 10 ¼ , 10 ⅞ and 12 ⅛ .
	2. 12 ⅛ has two more frequencies than 12.
	3. The total frequency from 9 to 10 is three.
	4. There are 25 recorded measurements in total.
	5. The lowest frequency is one.



BARRIERS

Help the workers put the barriers on their proper places by constructing a line plot with ¼ units.

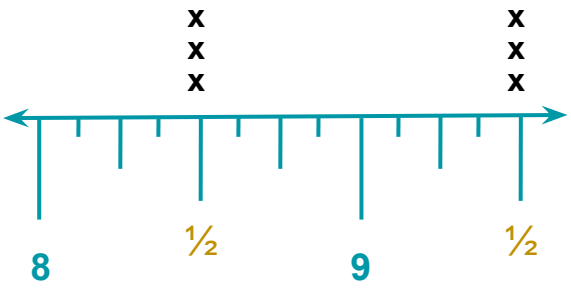
40 ¾	41 ¼	40 2/4	41 ¾	40 2/4
40 2/4	40 2/4	41 ¼	40 ¾	41 ¾
41 ¼	40 ¾	40 2/4	41 ¼	41 ¾

Interpretations:

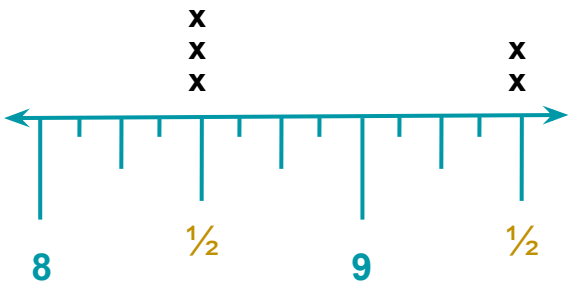
BEWARE OF THE FALLING DEBRIS

Protect yourself from falling debris by encircling the correct answer.

1. Which line plot shows the following values: 8 ½ , 8 ½ , 9 ½ , 8 ½ , 9 ½ ?

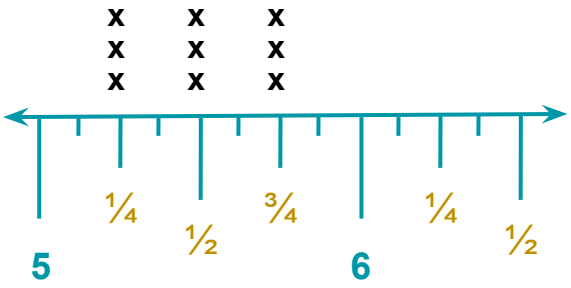


A

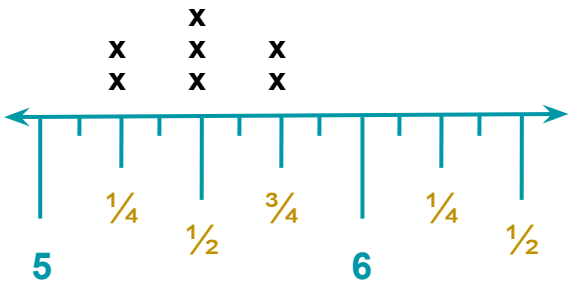


B

2. Which is the correct line plot for : 5 ¼ , 5 ¾ , 5 ½ , 5 ¼ , 5 ¼ , 5 ¾, 5 ¾, 5 ½, 5 ½ ?



A



B

BUILD AND PLOT

Build and plot these values in a number line. These are the answers of 15 workers about the question: “How many hours do you usually sleep at night?”

6 ½	6 ½	7 ½	6 ½	7 ½
7 ½	7 ¾	7 ¾	7 ¾	6 ½
7 ¾	7 ¾	6 ½	7 ¾	7 ½

Interpretations:

ANSWER GUIDE

Activity 1

1. 19/4	21/4	23/4	25/4	27/4
2. 11/4	13/4	15/4	17/4	19/4

Activity 2

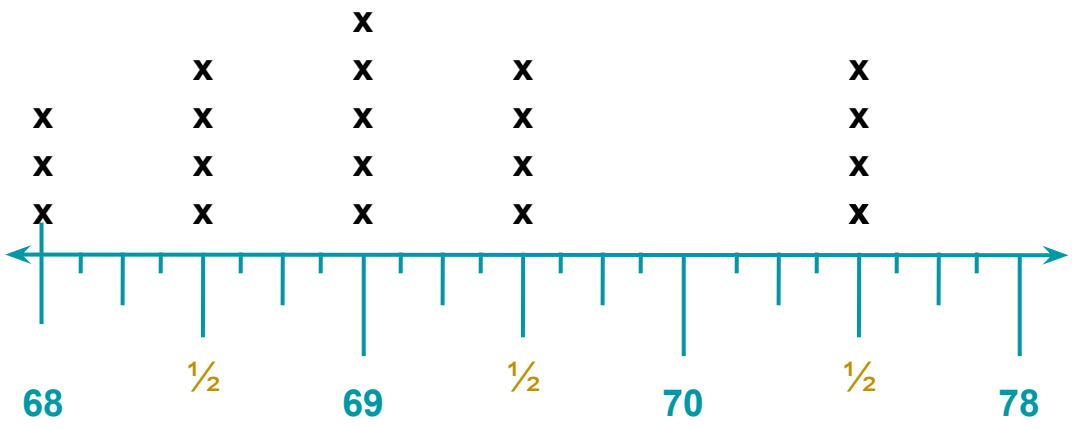
1. 20/2 should be 19/2. 22/2 should be 21/2
2. Instead of ⅕, ⅖ , ⅗ , ⅘ , and 5/5, they should be ¼'s and ¾ 's.

Activity 3

Values	45 ⅔	47 ½	58 ½
Frequency	3	4	4

Values	1 ⅔	2 ½	3 ⅜
Frequency	4	3	4

Activity 4



ANSWER GUIDE

Activity 5

1. Three
2. 77 ½
3. (75 ½, 76 ½, and 77) (76 and 78)
4. 21 sets

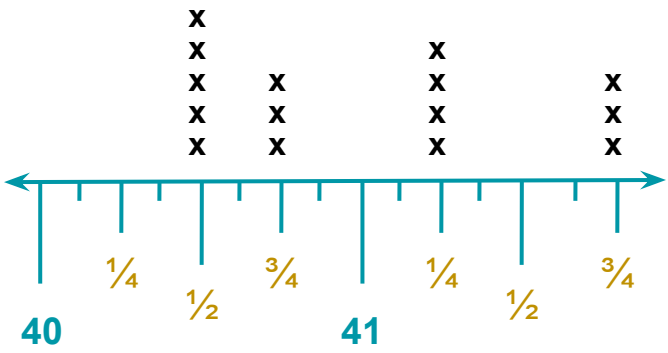
Activity 6

Answers may vary.

Activity 7

1. TRUE 2. TRUE 3. FALSE 4. TRUE 5. TRUE

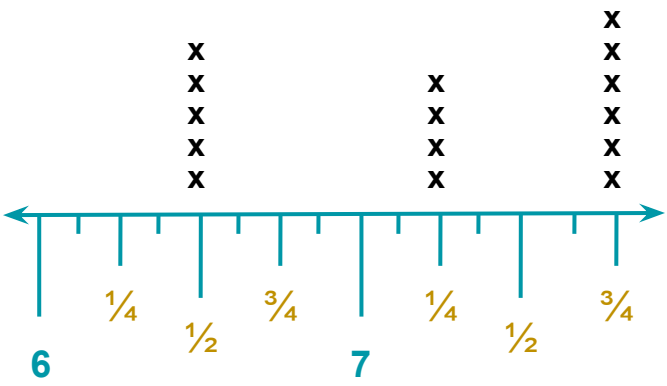
Activity 8



Activity 9

1. B 2. A

Activity 10



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