

PA Grade 7, Math Anchor

M07.D-S.2.1.1

Compare two numerical data distributions using measures of center and variability.

Example 1: The mean height of players on the basketball team is 10 cm greater than the mean height of players on the soccer team. This difference is equal to approximately twice the variability (mean absolute deviation) on either team. On a line plot, note the difference between the two distributions of heights.

Example 2: Decide whether the words in a chapter of a seventh-grade science book are generally longer than the words in a chapter of a fourth-grade science book.

Monday Oct 16: Continue on Tuesday

Together use studyisland.com software and project problems causing some difficulties such as:

A survey was conducted on the salaries of 30 randomly selected households in two different cities. Fifteen of the people surveyed resided in Cartisia, while the other 15 resided in Pascalville.

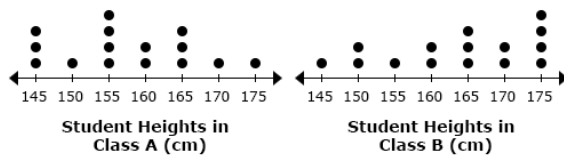
	Cartisia	Pascalville
First Quartile	\$38,000	\$45,000
Second Quartile (Median)	\$50,000	\$68,000
Third Quartile	\$68,000	\$77,000

Based on the samples, what generalization can be made?

- A. Not enough information is provided to draw any of these conclusions.
- B. The median in Cartisia is \$18,000 more than in Pascalville.
- C. At least half of the household incomes in both towns are \$50,000 or greater.
- D. At least half of the household incomes in both towns are \$50,000 or less.

Quartiles are later in grade 8 yet MEDIAN is grade 7 so discuss 50% on either side.

Mr. Rogers recorded the height of 15 students from two of his classes.



Based on these samples, what generalization can be made?

- A. The range of the student heights in Class A is greater than the range of the student heights in Class B.
- B. The median student height in Class A is equal to the median student height in Class B.
- C. The mean student height in Class A is less than the mean student height in Class B.
- D. The median student height in Class A is more than the median student height in Class B.

Mean needs calculated.

ASSESSMENT ANCHOR

M06.D-S.1 Demonstrate understanding of statistical variability by summarizing and describing distributions.

DESCRIPTOR

M06.D-S.1.1 Display, analyze, and summarize numerical data sets in relation to their context.

ELIGIBLE CONTENT

M06.D-S.1.1.1 Display numerical data in plots on a number line, including line plots, histograms, and box-and-whisker plots.

M06.D-S.1.1.2 Determine quantitative measures of center (e.g., median, mean, mode) and variability (e.g., range, interquartile range, mean absolute deviation).

M06.D-S.1.1.3 Describe any overall pattern and any deviations from the overall pattern with reference to the context in which the data were gathered.

M06.D-S.1.1.4 Relate the choice of measures of center and variability to the shape of the data distribution and the context in which the data were gathered.

Interestingly, 6th grade math standards have range, interquartile range, standard deviation but not stated in higher (7th or 8th grade) yet in studyisland and on the Keystone Algebra. This is from 2023 Sampler

PSSA MATHEMATICS GRADE 7

14. A sample of 8 pitchers of skim milk and 8 pitchers of whole milk are in a refrigerator. The table below lists the amount of calcium, in milligrams, in each pitcher of milk.

Amount of Calcium (milligrams)

Skim Milk	853	854	856	857	865	886	904	916
Whole Milk	818	836	841	870	874	879	881	938

Based on the information shown in the table, which statement about the distribution of calcium in skim milk and the distribution of calcium in whole milk is true?

- A. Both distributions have exactly one mode.
- B. Both distributions have a median that is less than 870 milligrams.
- C. The range of the distribution of calcium in whole milk is almost twice the range of the distribution of calcium in skim milk.
- D. The range of the distribution of calcium in whole milk is 85 milligrams more than the range of the distribution of calcium in skim milk.

PSSA MATHEMATICS GRADE 7

15. A crate contains green, red, and yellow apples. Information about the number of apples of each color in the crate is listed below.

- green: 24
- red: 15
- yellow: ?

One apple is randomly selected from the crate. The probability of the apple being red is $\frac{1}{3}$. How many yellow apples are in the crate?

- A. 2
- B. 6
- C. 39
- D. 45

PSSA MATHEMATICS GRADE 7

16. Dorian and Sarah are the only two students running for class president. There are 311 votes in the election. Every vote is for either Dorian or Sarah. Which outcome is **certain** to happen?

- A. Either Dorian or Sarah will receive exactly 156 votes.
- B. Neither Dorian nor Sarah will receive exactly 156 votes.
- C. Either Dorian or Sarah will receive at least 156 votes.
- D. Neither Dorian nor Sarah will receive at least 156 votes.

Below are from the 2022 Sampler

PSSA MATHEMATICS GRADE 7

14. Mr. Eliaz randomly selects a student from his algebra class each day. Each student is equally likely to be selected. There is an equal number of male and female students in his class. On Monday, Tuesday, Wednesday, and Thursday of this week, the randomly selected student is a male student. Which statement **best** describes the probability Mr. Eliaz selects a male student on Friday?

- A. The probability Mr. Eliaz selects a male student on Friday is the same as it was on each of the other days.
- B. The probability Mr. Eliaz selects a male student on Friday is less than it was on other days because he has already selected a male student 4 days in a row.
- C. The probability Mr. Eliaz selects a male student on Friday is greater than it was on other days because he has already selected a male student 4 days in a row.
- D. The probability Mr. Eliaz selects a male student on Friday is impossible to determine without knowing how many students are in his class.

PSSA MATHEMATICS GRADE 7

15. A nursery sells tulip plants. Each plant has 1 tulip. The tulips come in 4 different colors. The tulip plants available at the nursery are listed below.

- 22 plants with a red tulip
- 30 plants with a pink tulip
- 28 plants with a yellow tulip
- 20 plants with a white tulip

Amy purchases one tulip plant at random. What is the probability that Amy's tulip plant has a tulip that is **not** pink?

- A. $\frac{1}{4}$
- B. $\frac{3}{10}$
- C. $\frac{7}{10}$
- D. $\frac{3}{4}$

PSSA MATHEMATICS GRADE 7

16. The table below shows the number of each color of paper clip in a container.

Paper Clips in a Container

Color of Paper Clips	Number of Paper Clips
blue	13
green	4
white	8
yellow	10

A paper clip is randomly selected from the container three times and is replaced each time. What is the **approximate** probability of first selecting a blue paper clip and then 2 green paper clips?

- A. 0.00397
- B. 0.00485
- C. 0.04245
- D. 0.08571

Below are from the 2021 Sampler

PSSA MATHEMATICS GRADE 7

14. Customers in two randomly selected groups at a yogurt shop are asked their preference of yogurt flavors. The responses for the customers in each group are summarized in the table below.

Customer Yogurt Flavor Preference

	Peach	Strawberry	Vanilla	Total
Group 1	40	25	10	75
Group 2	50	10	15	75

Based on the information shown in the table, which statement **best** describes the preferences of the customers in the two groups?

- A. In both groups, more customers prefer peach-flavored yogurt than either of the other two flavors.
- B. In both groups, fewer customers prefer vanilla-flavored yogurt than either of the other two flavors.
- C. In group 2, the same number of customers prefer strawberry-flavored yogurt and vanilla-flavored yogurt.
- D. In group 1, more customers prefer either strawberry-flavored yogurt or vanilla-flavored yogurt than peach-flavored yogurt.

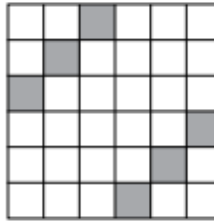
PSSA MATHEMATICS GRADE 7

15. A team of 10 basketball players have their heights recorded to make a data set. The mean, median, mode, and range of the data set are recorded. Then, the height of the team's coach is included to make a new data set. The coach is shorter than all but one of the basketball players. Which measure **must** be the same when the coach's height is included?

- A. mean
- B. median
- C. mode
- D. range

PSSA MATHEMATICS GRADE 7

16. Some of the squares on the grid below are shaded.



One square on the grid is randomly selected. What is the probability that the square is **not** shaded?

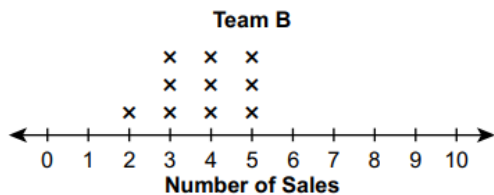
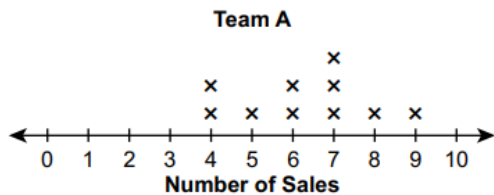
- A. $\frac{1}{36}$
- B. $\frac{1}{30}$
- C. $\frac{29}{36}$
- D. $\frac{5}{6}$

Below are from the 2019 Sampler

PSSA MATHEMATICS GRADE 7

13. Which statement **best** describes a random sample of all students in a middle school?
- A. Of all the students who are on the track team, the first three to finish a race are selected.
 - B. Of all the students who are in the drama club, every third student on the roster is selected.
 - C. Of all the students who complete an assignment, the first, third, and tenth students are selected.
 - D. Of all the students who attend a school-wide assembly, those sitting in every third seat are selected.

14. Two teams sold the same item for a fundraiser. The number of sales by each team member is shown in the line plots below.

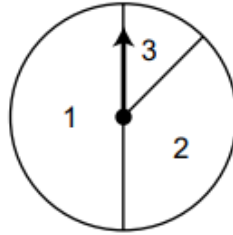


Based on the line plots, which statement is true?

- A. No team member from team B had more sales than any team member from team A.
- B. Every team member from team A had more sales than 50% of the team members from team B.
- C. At least one team member from each team had the median number of sales for his or her team.
- D. The range for the number of sales for team A is equal to the greatest number of sales for team B.

PSSA MATHEMATICS GRADE 7

15. Pat is conducting a probability experiment using the spinner pictured below.



Pat spins the spinner one time. Which statement about the result of the spin is true?

- A. Region 1 is certain.
- B. Region 3 is impossible.
- C. Region 2 is more likely than region 3.
- D. Region 1 and region 2 are equally likely.

PSSA MATHEMATICS GRADE 7

16. Using data from car sales, probabilities for the color of a car sold were calculated. The probabilities for two colors are listed below.

- The probability a car sold is white is 0.21.
- The probability a car sold is black is 0.19.

Based on these probabilities, how many of the next 200 cars sold are likely to be white and how many are likely to be black?

- | | |
|---------------------------|---------------------------|
| A. white: 11
black: 10 | B. white: 21
black: 19 |
| C. white: 42
black: 38 | D. white: 80
black: 80 |

Wednesday - Friday

ASSESSMENT ANCHOR	
M07.D-S.3	Investigate chance processes and develop, use, and evaluate probability models.
DESCRIPTOR	ELIGIBLE CONTENT
M07.D-S.3.2 Use probability to predict outcomes.	M07.D-S.3.2.1 Determine the probability of a chance event given relative frequency. Predict the approximate relative frequency given the probability. <i>Example: When rolling a number cube 600 times, predict that a 3 or 6 would be rolled roughly 200 times but probably not exactly 200 times.</i>
	M07.D-S.3.2.2 Find the probability of a simple event, including the probability of a simple event not occurring. <i>Example: What is the probability of not rolling a 1 on a number cube?</i>
	M07.D-S.3.2.3 Find probabilities of independent compound events using organized lists, tables, tree diagrams, and simulation.

Using worksheets on fundamental counting principle, tree diagrams, and the conditional probability. Packet is 10 page sides so cover 1 page both sides each day at a minimum.