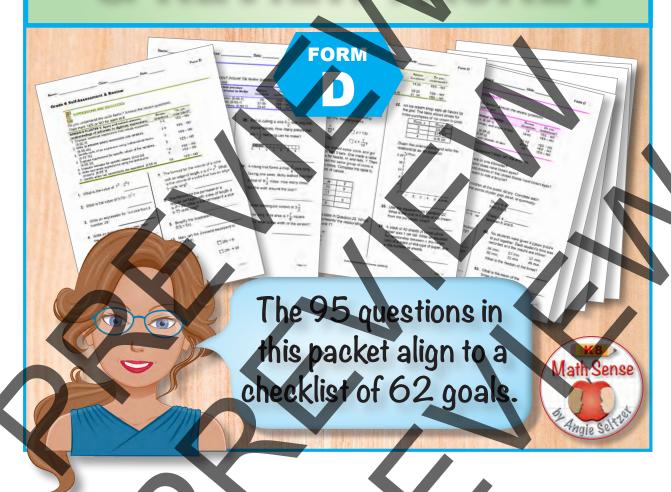
Grade 6 Math

SELF-ASSESSMENT & REVIEW PACKET



What's included?

- ► A list of math goals for each CCSS domain and cluster
- ➤ 95 review questions, by cluster
- ► 14 pages plus answers

This packet is a PDF so it can either be assigned electronically for distance learning, or printed at home or school.

Do your students know these important Grade 6 topics?

- ► Solving Equations & Inequalities
- Surface Area and Volume
- ► Dividing Fractions & Decimals
- ► GCF and LCM
- ► Ratios, Proportions, and Percent
- ► Mean, Median, Range
- ► Histograms and Box Plots

CONTENTS

		•	
y x	EXPRE	ESSIONS & EQUATIONS	1-3
2			
n^2	6E1.	Apply and extend previous understandings of arithmetic to algebraic expressions.	
-a	6E2.	Reason about and solve one-variable equations and inequalities.	
	6E3.	Represent and analyze quantitative relationships between dependent and independent variables.	



Domain

GEOMETRY

4-5

Pages

6G1. Solve real-world and mathematical problems involving area, surface area, and volume



THE NUMBER SYSTEM

6-9

- **6N1.** Apply and extend previous understandings of multiplication and division to divide fractions by fractions.
- **6N2.** Compute fluently [all operations] with multi-digit numbers and find common factors and multiples.
- Apply and extend previous understandings of numbers to the system of rational numbers.



RATIOS & PROPORTIONS

9-10

6R1. Understand ratio concepts and use ratio reasoning [and percents] to solve problems



STATISTICS & PROBABILITY

11-1/

- 6S1. Develop understanding of statistical variability.
- 6S2. Summarize and describe distributions.

ANSWER SECTION 1-4

Grade 6 Math Self-Assessment & Review Packet Form D (Published 08/05/2015 & Updated 08/02/2020)

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Teacher's Notes

About the Goals

This packet contains a list of goals for each cluster of content in the Common Core State Standards for Grade 6 mathematics. Cluster headings are taken directly from CCSS documents, and each cluster has 3 to 9 goals. The goals are clear and concise, in the style of typical chapter or lesson objectives.

About the Review Questions

For each Grade 6 goal there are one or more review questions, usually in short-answer format. Some questions are in multiple choice or multiple response format. This packet contains a total of 95 review questions that provide an excellent overview of all CCSS content for Grade 6.

Using Self-Assessment

Beside the goals/objectives are item numbers of the related questions. For each goal, students should write Yes or No to indicate whether they understand the conten

DOMAIN E CLUSTER 3: Represent and analyze quantitative relationships between dependent and independent variables.	Review Questions	Do you understand?
Use two variables to represent two related quantities. [6.EE.9]	19-20	YES - NO
2. Graph ordered pairs of related quantities. [6,EE.9]	22-23	YES - NO
3. Write equations to describe related variables. [6.EE.9]	21, 24	YES - NO

If desired, a parent or teacher may mark the goals that students have mastered. You may want to recheck students' mastery of the same goals later in the year using parallel forms of this packet.

About the Domain Icons

Each domain is represented by a letter-shaped icon that includes elements to symbolize key content. For example, the "E" icon includes variables and the "S" icon includes a circle graph and a spinner. Domain icons provide a quick way to identify the domain or strand of content on the pages.

Distance Learning File Tips

You may assign this file or individual pages in a password protected classroom management system. Students can type answers into a separate file, or write answers on paper and submit as a photo. If your system has an option of adding an annotation layer to a PDF, you can have students type or draw answers on that layer and submit the annotated file.

Follow-Up Suggestions

Try parallel or more advanced review packets.

If students grasp most concepts, download and review the next grade level and/or review this level again in four to six weeks.

If necessary, review math from the prior grade.

If students struggle with a lot of concepts, try easier eview packets or online practice games from various websites or activity books.

Try printable card games.

Card games are available for the topics listed below, Kids can play easy games with an aide, a parent, or a friend. The sets are numbered and color coded to match the clusters and goals.



Games provide extra practice and strengthen concepts.

Card Games fo

\ \	
6E11	Understanding Exponents
6E26	Inequalities on the Number Line
6G11	Understanding Area of a Triangle
6G17	Lengths and Coordinates
6G18	Nets for 3-Dimensional Figures
6 G 19	Understanding Surface Area
6N12	Dividing Unit Fractions by Unit Fractions
6N23	Multiplying Decimals Less than 1
6R/17-E	Eighths as Decimals and Percents
6R17-1	Tenths and Hundredths as Decimals and Percents
6R17-U	Unit Fractions as Decimals and Percents
6R18	Finding the Whole from a Part & Percent
6R19-N	Finding a Percent of a Number
6R19-N	Finding More Than 100% of a Number
6R19-0	Percents of Numbers Greater Than 100
6 S 13	Understanding the Median
6 S 14	Understanding the Mean



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Angie Seltzer

Name:	Class:	Date:	Form D
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Grade 6 Self-Assessment & Review

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	yx	
	n^2	
П	-a	

EXPRESSIONS AND EQUATIONS

Do you understand the skills below? Answer the review questions. Then mark YES or NO for each skill.

DOMAIN E CLUSTER 1: Apply and extend previous	Review	Do you
understandings of arithmetic to algebraic expressions.	Questions	understand?
1. Evaluate numerical expressions that include exponents.	1-2	YES - NO
[6.EE.1] 2. Write or interpret simple expressions with variables.	3-4	YES - NO
[6.EE.2a]	3-4	1E3 - NO
3. Identify parts of an expression using mathematical terms.	5	YES - NO
[6.EE.2b]		
 Evaluate expressions for specific values of the variables. [6.EE.2c] 	6	YES – NO
5. Evaluate formulas for specific values. [6.EE.2c]	7-8	YES - NO
6. Write equivalent expressions using the distributive	9	YES – NO
property. [6.EE.3]		TES - NO
7. Identify when two expressions are equivalent. [6.EE.4]	10	YES - NO

- 1. What is the value of $7^2 2^3$?
- **2.** What is the value of $5(10-7)^4$?
- Write an expression for "w more than a number 28."
- **4.** Write an expression for *c* less than the product of of *k* and *y*.
- **5.** What is the exponent in the expression $n^5 + 3n$?
- **6.** What is the value of *f* divided by 13 when *f* = 52?

- 7. The formula for the volume of a cube with an edge of length s is $V = s^3$. What is the volume of a cube that has an edge 5 units long?
- 8. The formula for the perimeter of a regular pentagon with sides of length d is P = 5d. What is the perimeter if a side is 75 units long?
- 9. Simplify the expression 6(3j + 5k).
- **10.** Mark (\checkmark) the choice(s) equivalent to 4(7k + 9).

Γ	6	4 <i>k</i>
- 1	U	T/\

 \square 4(16k)

☐ 28k	+	36
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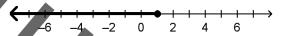
DOMAIN E CLUSTER 2: Reason about and solve one-variable equations and inequalities.	Review Questions	Do you understand?
Use substitution to decide if a number is a solution to an equation. [6.EE.5]	11	YES – NO
Use variables and expressions to represent situations.[6.EE.6]	12-13	YES - NO
3. Write equations of the form x + p = q to solve problems.[6.EE.7]	14	YES - NO
4. Write equations of the form px = q to solve problems. [6.EE.7]	15	YES – NO
5. Write or interpret inequalities x > c or x < c. [6.EE.8]	16	YES – NO
6. Represent inequalities on number line diagrams. [6.EE.8]	17-18	YES - NO

- **11.** Which number is a solution to 40 = 6k + 10?
 - **A.** 8
- **B**. 2
- C. 24
- **D.** 5
- **12.** Players in a band lined up with 6 in the first row followed by *r* rows with 8 per row. Write an expression for the total number of band players.
- 13. Which expression describes the values in the second column?

k	?
9	18
7	14

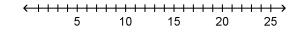
- \mathbf{A} , $k \times 9$
- **B.** k + 9
- **C.** k + 2
- **D.** *k* x 2
- **14.** A man is 28 years old and has an uncle who is *q* years older. His uncle is 58 years old. Which equation can be solved to find *q*?
 - **A.** $28 \div q = 58$
 - **B.** 28 + q = 58
 - **C.** 28 q = 58
 - **D.** $28 \times q = 58$

- 15. The length of a driveway is five times the width, w. The length is 60 feet. Which equation represents this situation?
 - **A.** 5w = 60
 - **B.** w + 5 = 60
 - **C.** w 60 = 5
 - **D.** 12w = 60
- **16.** The value of a variable *k* is fewer than 16. Which inequality describes *k*?
 - **A.** $k \ge 16$
- **B.** $k \le 16$
- **C.** *k* < 16
- **D.** k > 16
- **17.** The graph shows possible values of a variable, *n*.



What inequality is shown by the graph?

Sarah's puppy weighs more than 10 pounds but less than 18 pounds. Let p be the weight of the puppy in pounds. Graph all possible values of p.



DOMAIN E CLUSTER 3: Represent and analyze quantitative relationships between dependent and independent variables.	Review Questions	Do you understand?
1. Use two variables to represent two related quantities. [6.EE.9]	19-20	YES - NO
2. Graph ordered pairs of related quantities. [6.EE.9]3. Write equations to describe related variables. [6.EE.9]	22-23 21, 24	YES - NO YES - NO

19. Recall that a centimeter is equal to 10 millimeters. Let y = the length of an object in centimeters and x = the length in millimeters. Mark (✓) the equation(s) that show the correct relationship between the measurements.

20. Annabelle tossed some coins and got 13 heads and 9 tails. She made a table of values for heads, *H*, and tails, *T*. Then she tossed the same group of coins a few more times. Complete the table to show pairs of values.

Н	1
13	9
11	
	8
9	

21. Refer to the table in Question 20. Which equation represents the relationship between *H* and *T*?

A.
$$T = 22 - H$$

B.
$$H = T - 4$$

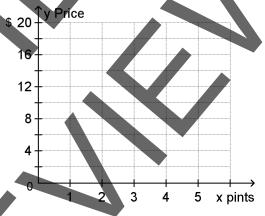
C.
$$9T = 13H$$

D.
$$H - 4 = T$$

22. An ice cream shop sells all flavors by the pint. The table shows prices for three purchases of ice cream in pints.

Pints, x	Price, y
2	\$9.00
3	\$13.50
4	\$18.00

Graph the ordered pairs and write the relationship as an equation.



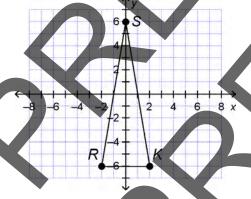
- 23. Use the equation from Question 22.
 What is the cost of 5 pints of ice cream from the ice cream shop?
- 24. A stack of 40 sheets of construction paper was 1 cm tall. Write an equation for relationship between *x*, the height (cm) of a stack of this type of paper, and *y*, the number of sheets.



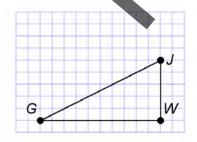
Do you understand the skills below? Answer the review questions. Then mark YES or NO for each skill.

DOMAIN G CLUSTER 1: Solve real-world and	Review	Do you
mathematical problems involving area, surface area,	Questions	understand?
and volume.		
1. Find areas of triangles. [6.G.1]	25-26	YES - NO
Decompose and compose shapes into triangles and rectangles. [6.G.1]	27	YES - NO
3. Find areas of polygons. [6.G.1]	28	YES - NO
4. Use cubes to find volumes of prisms with fractional edge lengths. [6.G.2]	29	YES - NO
Multiply to find volumes of prisms with fractional edge lengths. [6.G.2]	30	YES - NO
6. Draw polygons given coordinates for the vertices. [6.G.3]	31	YES - NO
7. Use coordinates to calculate the length of vertical or horizontal segments. [6.G.3]	32-33	YES - NO
8. Represent 3-dimensional figures as nets. [6.G.4]	34	YES - NO
9. Calculate surface areas. [6.G 4]	35	YES - NO

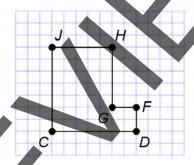
25. What is the area of triangle RKS?



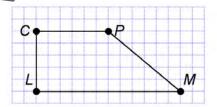
26. What is the area of triangle *GWJ*? Each grid square is one unit wide.



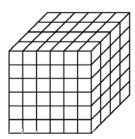
27. What is the area of shape *CDFGHJ*? Each grid square is one unit wide.



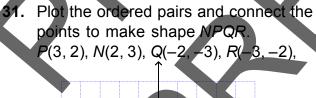
28. What is the area of trapezoid *LMPC*? Each grid square is one unit wide.

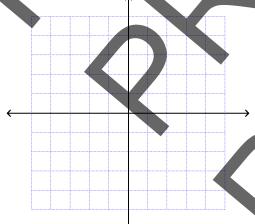


29. The prism is 6 cubes wide, 6 cubes high, and 4 cubes deep. Each cube is 0.5 inch wide. What is the volume of the prism in cubic inches?

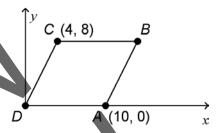


30. A rectangular prism measures 6.2 cm wide, 1.6 cm tall, and 4.7 cm long. What is the volume of the prism in cubic units? Use a calculator. Round the answer to the nearest whole number.

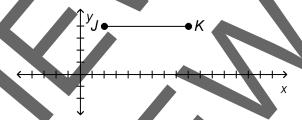




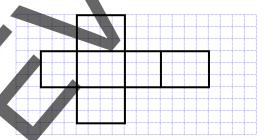
32. Figure *ABCD* is a parallelogram. What are the coordinates of Point B?



Segment JK shown below is 7 units long. Point J has coordinates (2, 4). What are the coordinates of Point K?



The figure below shows a net for a rectangular prism with a length of 4 units and a width of 3 units. What is the height of the prism?



35. What is the surface area of the prism show in Question 34?

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THE NUMBER SYSTEM

Do you understand the skills below? Answer the review questions. Then mark YES or NO for each skill.

DOMAIN N CLUSTER 1: Apply and extend previous understandings of multiplication and division to divide fractions by fractions.	Review Questions	Do you understand?
1. Relate division of fractions to multiplication. [6.NS.1]	36	YES – NO
2. Divide fractions by fractions using models. [6.NS.1]	37-38	YES - NO
3. Divide fractions by fractions to solve problems. [6.NS.1]	39-40	YES - NO

- **36.** Which has the same value as $\frac{2}{9} \div \frac{1}{7}$?
 - **A.** $\frac{2}{9} \div 7$
 - $\mathbf{B.} \quad \frac{2}{9} \times 7$
 - $\mathbf{C.} \quad \frac{9}{2} \times 7$
 - D. $\frac{9}{2} \times \frac{1}{7}$
- 37. The 1-inch by 1-inch square is divided into thirds. Use the model to show $\frac{2}{3}$ divided by $\frac{1}{9}$. What is the quotient?





38. Ron is cutting a wire $5\frac{1}{2}$ feet long into shorter pieces. How many pieces that are $1\frac{1}{2}$ feet long can he make?

							\Box	
0	7	2	3	3	4_	5		6

- 39. A hiking trail forms a loop $\frac{3}{4}$ -mile long. During one week, Molly walked this trail a total of $8\frac{1}{4}$ miles. How many times did she walk around the loop?
- **40.** A small rectangular screen is $3\frac{1}{2}$ inches long. If its area is $7\frac{7}{8}$ square inches, what is the width of the screen?

Name:	Class:	Date:	Form D
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DOMAIN N CLUSTER 2: Compute fluently with multi-digit	Review	Do you
numbers and find common factors and multiples.	Questions	understand?
1. Divide multi-digit numbers using the standard algorithm.	41-42	YES - NO
[6.NS.2]		
2. Add and subtract multi-digit decimals. [6.NS.3]	43-44	YES - NO
3. Multiply multi-digit decimals. [6.NS.3]	45-46	YES - NO
4. Divide multi-digit decimals. [6.NS.3]	47-48	YES - NO
5. Find greatest common factors. [6.NS.4]	49	YES - NO
6. Find least common multiples. [6.NS.4]	50	YES - NO
7. Use the distributive property to isolate a common	51	YES - NO
factor.[6.NS.4]		



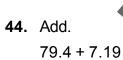
Do not use a calculator for problems in this cluster.

41. Divide. Write the quotient and remainder.

42. Divide.

16.9 - 0.16

43. Subtract.



45. Multiply.



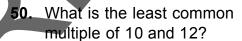


46. Multiply.

47. Divide

48. Divide.

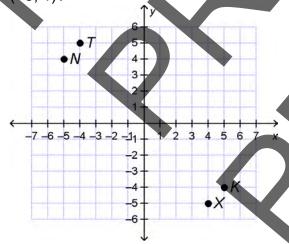
49. What is the greatest common factor of 21 and 70?



- 51. Which of these is equal to 18p + 16q?
 - **A.** 34pq
 - **B.** 9(2p + 8q)
 - **C.** 2(9p) + 8q
 - **D.** 2(9p + 8q)

DOMAIN N CLUSTER 3: Apply and extend previous understandings of numbers to the system of rational numbers.	Review Questions	Do you understand?
 Relate positive and negative numbers to real situations. [6.NS.5] 	52	YES - NO
2. Write and identify opposites of integers. [6.NS.6a]	53	YES - NO
3. Relate opposite numbers in ordered pairs to reflections. [6.NS.6b]	54	YES - NO
4. Graph or identify points in four quadrants. [6.NS.6c]	55	YES - NO
 Compare rational numbers using a number line. [6.NS.7a] 	56-57	YES - NO
Write comparisons for ordering rational numbers in real situations. [6.NS.7bcd]	59	YES – NO
7. Solve problems involving coordinate graphs in four quadrants. [6.NS.8]	58	YES - NO
Find distance between two points with the same first or second coordinate. [6.NS.8]	60	YES - NØ

- **52.** Write an integer to represent a population loss of 59.
- 53. What is the opposite of 40?
- **54.** What ordered pair locates a reflection of (-2, 7) over the *y*-axis?
- **55.** What letter is located by the ordered pair (-5, 4)?

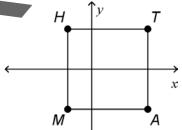


56. Use the number line. Mark () the choice(s) below that are true.



- ☐ -1.5 < -2.5
 </p>

 ☐ 1.5 < 1.5
 </p>
- -2.5 = 2.5 -2.5 < -1.5
- **57.** What is the distance between 32 and zero on a number line?
- **58.** Square *MATH* in the figure below has an area of 100. Side *MA* is parallel to the *x*-axis. Point *M* has coordinates (–3, –5). What are the coordinates of Point *T*?



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- 59. Three players are competing in a contest. Sam has –14 points, Teresa has –7 points, and Wanda has 10 points. Write the players names in order from highest to lowest score.
- **60.** What is the distance in units between (-21, 5) and (-57, 5) on a coordinate plane?



RATIOS AND PROPORTIONAL RELATIONSHIPS

Do you understand the skills below? Answer the review questions. Then mark YES or NO for each skill.

DOMAIN R CLUSTER 1: Understand ratio concepts and	Review	Do you
use ratio reasoning [and percents] to solve problems.	Questions	understand?
1. Write and interpret ratios. [6.RP.1]	61-62	YES - NO
2. Find unit rates related to ratios.[6.RP.2]	63	YES - NO
3. Write equivalent ratios, including ratio tables. [6.RP.3a]	64-67	YES - NO
4. Use ratios to convert measurements. [6.RP.3d]	68	YES - NQ
5. Plot pairs of ratios on the coordinate plane. [6.RP.3a]	69	YES - NO
6. Solve unit rate problems such as unit pricing. [6.RP.3b	70-71	YES - NO
7. Write a fraction or ratio as a percent. [6.RP.3c]	72-74	YES - NO
8. Find a number given the part and the percent. [6.RP.3c]	75-76	YES - NO
9. Find a percent of a number. [6.RP.3c]	77	YES - NO

- 61. There were 9 students waiting in line to buy tickets. 7 of the students were girls and the rest were boys. What was the ratio of boys to all students in line?
- **62.** The dark and light parts of the bar below have a ratio of 7 to 5. What fraction of the bar is dark?



63. Mrs. Ramos drove 155 miles in 2.5 hours. What was the unit rate in miles per hour?

- **64.** The ratio of 3 to 5 is equivalent to which of these ratios?
 - A. 18 to 30
 - **B.** 45 to 27
 - **C.** 30 to 27
 - **D.** 18 to 45
- **65.** Complete the table of equivalent ratios.

4	8	12		20
9	18		36	

66. What value of *d* makes the ratios equal?

$$\frac{d}{10} = \frac{8}{5}$$

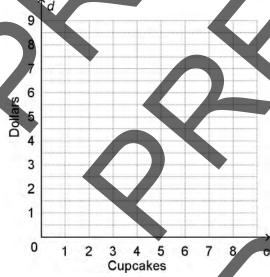
- **67.** Eddie spent \$20 for 5 greeting cards. At that rate, how much would it cost for 7 greeting cards?
- **68.** What numbers are missing? Complete the table of equivalent measurements.

feet	yards
12	
45	15
	6
27	

69. The table shows the cost in dollars, *d*, if you buy *c* cupcakes at a bakery.

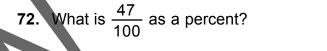
С	d
2	1.70
3	2.55
5	4.25
8	6.80

Plot the number pairs on the graph.

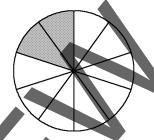


70. Look at the pattern of the graph in Question 69. How much would 4 cupcakes at the same bakery cost?

71. At a market, 1.8 pounds of green beans cost \$5.85. What was the unit price?



73. What percent of the circle is shaded?



74. The second bar is what percent as long as the first bar?

8	
10	

75. 259 is 70% of what number?

76. 64 students at a sports event are wearing pink. This is 25% of the students at the event. How many students are at the event?

77. Tuesday's attendance was 110% of Monday's attendance, 190. What was Tuesday's attendance?

Name: ˌ	Class:	Date:		Form D
	STATISTICS AND PROBABILITY			
	Do you understand the skills below? Answer Then mark YES or NO for each skill.	the review question	ns.	
	DOMAIN S CLUSTER 1: Develop understanding of statistical variability.	Review Questions	Do you understand?	
	Recognize statistical questions. [6.SP.1] Describe the center, spread (range), and shape of the center of the statistical questions.	78 of data 79-80	YES – NO YES – NO	
	on a dot plot. [6.SP.2] 3. Find the median of a data set. [6.SP.2] 4. Find the mean of a data set. [6.SP.2] 5. Recognize measures of center and variation of data [6.SP.3]	81-82 83-84 ata. 85	YES - NO YES - NO YES - NO	
78.	Which of these are statistical questions? Ma	ark (✔) the answers.		
	☐ (a) How many millimeters are in one kild ☐ (b) How many students in your class hav ☐ (c) What percent of 2-year-old children in ☐ (d) At what age do children learn to ride a	e brown eyes? the United States h	ave brown eye	es?
79.	The dot plot shows ages of 22 children at the sentence about the data using the words cli	-		
		There is a from 2 to 5.		
	0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 age	There is abetween 6 and 9.		
80.	What is the range of the ages of children shown by the dot plot/in Question 79?		•	ent's time was
		34 min. 30 min.	-	27 min. 48 min.
81.	What is the median of the ages shown on the dot plot in Question 79?	What is the	median of the	times?

83. What is the mean of the times in Question 82?

	orm D
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84. What is the mean of 45, 40, 35, 50, and 30?

85. A person has scores of 80, 85, and 90.Does including two more scores, 70and 95, change the median? Explain.

DOMAIN S CLUSTER 2: Summarize and describe distributions.	Review Questions	Do you understand?
 Find quartiles and interquartile range. [6.SP.5c] Display and describe data on box plots. [6.SP.4] 	86 87-88	YES - NO YES - NO
3. Display and describe data on histograms. [6.SP.4]4. Find the mean absolute deviation of a data set.	89-92 93	YES - NO YES - NO
[6.SP.5c] 5. Summarize data sets in relation to their context. [6.SP.5]	94-95	YES - NO

- **86.** These 18 ages of adults in a flower shop are in order from least to greatest. 22, 25, 34, 35, 35, 44, 48, 51, 54, 57, 57, 60, 62, 66, 68, 69, 72, 74
 - a. Write five numbers to summarize the data.

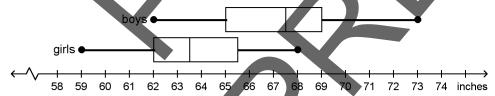
Minimum _____ First Quartile _____ Median _____

Third quartile _____ Maximum ____

- **b.** What is the interquartile range?
- 87. Draw a box plot to represent the data in Question 86.

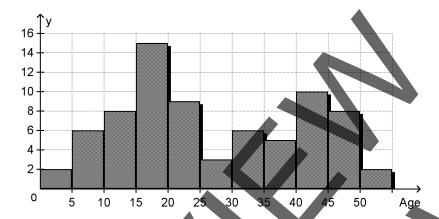


88. At a school, heights of 50 boys and 50 girls age 15 were measured. These two box plots show the results.



- a. Did boys or girls have a greater range in height?
- **b.** To the nearest whole inch, what was the third quartile of the boys' heights?

89. The histogram shows the ages of people who attended a talent show, grouped as 0-4, 5-9, 10-14, and so on.

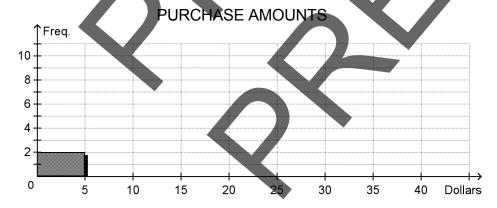


How many people 35 or older attended the show?

- **90.** How many people's ages are shown in the histogram for Question 89?
- 91. In what 5-year interval was the median age of people who attended the talent show?
- **92.** A sandwich shop owner kept track of purchases from customers for an hour. The purchase amounts (\$) are shown in the box, in order from least to greatest.

Γ	\$3.75	6.60	9.50	14.25	25.60
I	4.60	6.75	10,35	15.50	29.15
ı	5.80	6.95	10.65	20.05	30.20
	5.95	7.80	12.30	20.80	35.70
	6.45	8.25	12.15	22.50	37.75

Complete the histogram to show the frequency of purchases from 0 to \$4.99, \$5 up to \$9.99, \$10 up to \$14.99, and so on. The first bar is shown.

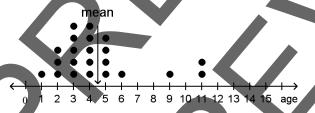


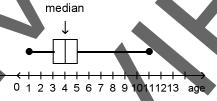
93. Greg kept track of his scores from playing a game 10 times. His scores are shown in order in the first and third columns. The mean was 49 points. Complete the table by finding the absolute value of the deviation (difference) between each score and the mean score (49).

Scores	Absolute deviation from the mean	Scores	Absolute deviation from the mean
38	49 – 38 =	52	
39		53	
41		5 5	
47		58	
47		60	

What is the mean absolute deviation? Show your work.

94. The dot plot and box plot show the distribution of ages of 22 children at a library. The mean and median are shown by arrows.





Which measure of center is a better representation of the data, the mean or the median? Why?

95. For Question 94, the mean absolute deviation is about 1.91 and the interquartile range (IQR) is 2. Which measure of variation is a better representation of the data, the IQR or the mean absolute deviation? Why?