Countdown to the Math STAAR™

Grade 6

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Mathematical Process Standards	
1A	apply mathematics to problems arising in everyday life, society, and the workplace;
1B	use a problem-solving model that incorporates analyzing given information, formulating a plan or strategy, determining a solution, justifying the solution, and evaluating the problem-solving process and the reasonableness of the solution;
1C	select tools, including real objects, manipulatives, paper/pencil, and technology as appropriate, and techniques, including mental math, estimation, and number sense as appropriate, to solve problems;
1D	communicate mathematical ideas, reasoning, and their implications using multiple representations, including symbols, diagrams, graphs, and language as appropriate;
1E	create and use representations to organize, record, and communicate mathematical ideas;
1F	analyze mathematical relationships to connect and communicate mathematical ideas; and
1G	display, explain, and justify mathematical ideas and arguments using precise mathematical language in written or oral communication
Number and Operations: Represent and Use Rational Numbers	
2A	classify whole numbers, integers, and rational numbers using a visual representation such as a Venn diagram to describe relationships between sets of numbers;
2B	identify a number, its opposite, and its absolute value;
2C	locate, compare, and order integers and rational numbers using a number line;
2D★	order a set of rational numbers arising from mathematical and real-world contexts; and
2E	extend representations for division to include fraction notation such as a/b represents the same number as $a \div b$ where $b \neq 0$.
Number and Operations: Representing Addition, Subtraction, Multiplication, and Division	
3A	recognize that dividing by a rational number and multiplying by its reciprocal result in equivalent values;
3B	determine, with and without computation, whether a quantity is increased or decreased when multiplied by a fraction, including values greater than or less than one;
3C	represent integer operations with concrete models and connect the actions with the models to standardized algorithms;
3D★	add, subtract, multiply, and divide integers fluently; and
3E★	multiply and divide positive rational numbers fluently.
Proportionality: Understanding Proportional Relationships	
4A	compare two rules verbally, numerically, graphically, and symbolically in the form of $y = ax$ or $y = x + a$ in order to differentiate between additive and multiplicative relationships; and
4B★	apply qualitative and quantitative reasoning to solve prediction and comparison of real-world problems involving ratios and rates.
4C	give examples of ratios as multiplicative comparisons of two quantities describing the same attribute;
4D	give examples of rates as the comparison by division of two quantities having different attributes, including rates as quotients;
4E	represent ratios and percents with concrete models, fractions, and decimals;
4F	represent benchmark fractions and percents such as 1%, 10%, 25%, 33 1/3%, and multiples of these values using 10 by 10 grids, strip diagrams, number lines, and numbers; and
4G★	generate equivalent forms of fractions, decimals, and percents using real-world problems, including problems that involve money.
4H★	convert units within a measurement system, including the use of proportions and unit rates.

Proportionality: Solving Problems Involving Proportional Relationships	
5A	represent mathematical and real-world problems involving ratios and rates using scale factors, tables, graphs, and proportions; and
5B★	solve real-world problems to find the whole given a part and the percent, to find the part given the whole and the percent, and to find the percent given the part and the whole, including the use of concrete and pictorial models.
5C	use equivalent fractions, decimals, and percents to show equal parts of the same whole.
Expressions, Equations, and Relationships	
6A	identify independent and dependent quantities from tables and graphs;
6B	write an equation that represents the relationship between independent and dependent quantities from a table; and
6C★	represent a given situation using verbal descriptions, tables, graphs, and equations in the form $y = kx$ or $y = x + b$.
Expressions, Equations, and Relationships: Developing Concepts of Expressions and Equations	
7A★	generate equivalent numerical expressions using order of operations, including whole number exponents, and prime factorization;
7B	distinguish between expressions and equations verbally, numerically, and algebraically;
7C	determine if two expressions are equivalent using concrete models, pictorial models, and algebraic representations; and
7D★	Generate equivalent expressions using the properties of operations: inverse, identity, commutative, associative, and distributive properties.
Expressions, Equations, and Relationships: Using Geometry to Represent Relationships and Solve Problems	
8A	extend previous knowledge of triangles and their properties to include the sum of angles of a triangle, the relationship between the lengths of sides and measures of angles in a triangle, and determining when three lengths form a triangle;
8B	model area formulas for parallelograms, trapezoids, and triangles by decomposing and rearranging parts of these shapes;
8C	write equations that represent problems related to the area of rectangles, parallelograms, trapezoids, and triangles and volume of right rectangular prisms where dimensions are positive rational numbers; and
8D★	determine solutions for problems involving the area of rectangles, parallelograms, trapezoids, and triangles and volume of right rectangular prisms where dimensions are positive rational numbers.
Expressions, Equations, and Relationships: Representing Situations	
9A	write one-variable, one-step equations and inequalities to represent constraints or conditions within problems;
9B	represent solutions for one-variable, one-step equations and inequalities on number lines; and
9C	write corresponding real-world problems given one-variable, one-step equations or inequalities.
Expressions, Equations, and Relationships: Solving Problems	
10A★	model and solve one-variable, one-step equations and inequalities that represent problems, including geometric concepts; and
10B	determine if the given value(s) make(s) one-variable, one-step equations or inequalities true.
Measurement and Data: Coordinate Geometry	
11A★	graph points in all four quadrants using ordered pairs of rational numbers.
Measurement and Data: Using Numerical or Graphical Representations to Analyze Problems	
12A	represent numeric data graphically, including dot plots, stem-and-leaf plots, histograms, and box plots;
12B	use the graphical representation of numeric data to describe the center, spread, and shape of the data distribution;
12C★	summarize numeric data with numerical summaries, including the mean and median (measures of center) and the range and interquartile range (IQR) (measures of spread), and use these summaries to describe the center, spread, and shape of the data distribution; and
12D★	summarize categorical data with numerical and graphical summaries, including the mode, the percent of values in each category (relative frequency table), and the percent bar graph, and use these summaries to describe the data distribution.

Measurement and Data: Using Numerical or Graphical Representations to Solve Problems	
13A★	interpret numeric data summarized in dot plots, stem-and-leaf plots, histograms, and box plots; and
13B	distinguish between situations that yield data with and without variability.
Personal Financial Literacy	
14A	compare the features and costs of a checking account and a debit card offered by different local financial institutions;
14B	distinguish between debit cards and credit cards;
14C	balance a check register that includes deposits, withdrawals, and transfers;
14E	describe the information in a credit report and how long it is retained;
14F	describe the value of credit reports to borrowers and to lenders;
14G	explain various methods to pay for college, including through savings, grants, scholarships, student loans, and work-study; and
14H	compare the annual salary of several occupations requiring various levels of post-secondary education or vocational training and calculate the effects of the different annual salaries on lifetime income.

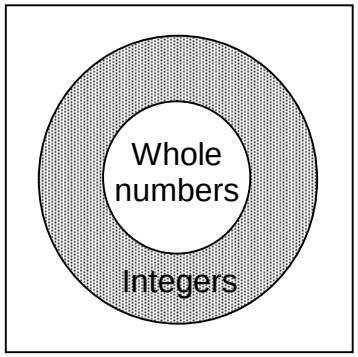
1 Which equations are NOT true?

*Select **TWO** correct answers.*

- ☐ $-4\,(2) = -8$
- ☐ $7 - (-3) = -10$
- ☐ $2\,(-2) + (-2) = -6$
- ☐ $-4 + (-11) = -15$
- ☐ $-15 \div (-5) = -3$

3D

2 The Venn diagram shows the relationships among different sets of numbers.



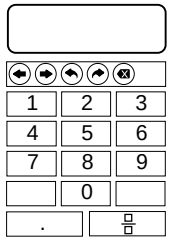
Which number would be located in the shaded part of the diagram?

A 8 **B** $\frac{1}{2}$ **C** -5 **D** -2.8

2A

3 A coach noted that 3 out of 8 players on a football team were not wearing mouth guards. What decimal is equivalent to the fraction of the players who were not wearing mouth guards?

Enter your answer in the box.



4G

4 Deonte is limited to 60 minutes of screen time after school. Deonte spends 70% of this time watching videos. How many minutes does Deonte watch videos after school?

F 45 minutes **G** 70 minutes **H** 42 minutes **J** 52.5 minutes

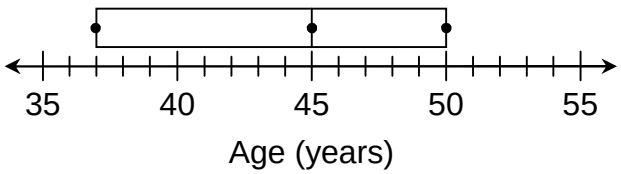
5B

5 The list shows the ages of 15 counselors working in a school district.

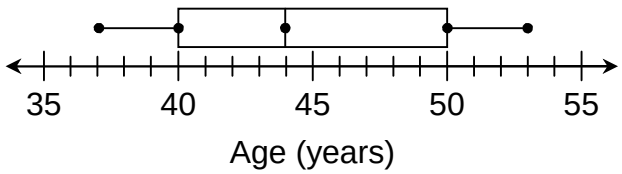
37, 38, 38, 40, 42, 44, 44, 45, 45, 47, 49, 50, 51, 52, 53

Which box plot best displays a summary of this information?

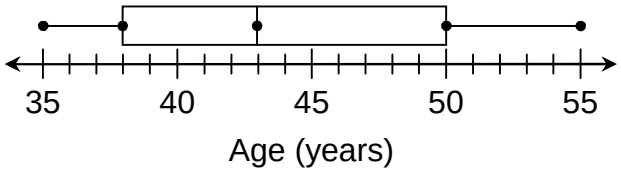
A



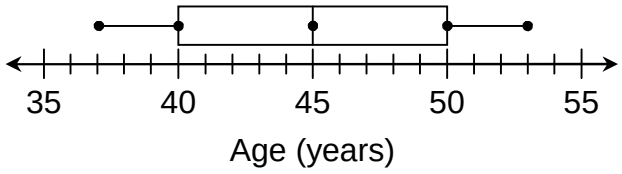
C



B



D



12A

1 Ethan and Bridget earn money by babysitting. Last week, Ethan earned $102 for babysitting 12 hours. Bridget earned $74 for babysitting 8 hours. Which statement is true?

A Bridget earned more money per hour than Ethan.

B Ethan earned more money per hour than Bridget.

C Ethan earned $8.25 per hour.

D Bridget earned $9.50 per hour.

4B

4 Determine whether each factorization is or is not a prime factorization of 40.

Place a checkmark in each row.

Factorization	Prime	Not Prime
$2 \cdot 2 \cdot 2 \cdot 5$	☐	☐
$5 \cdot 8$	☐	☐
$2^3 \cdot 5$	☐	☐

7A

6 Farrah listed a group of decimals, fractions, and percentages in order from greatest to least. Farrah could have created which list?

A $\frac{5}{8}$, 65%, 0.58, 49%, $\frac{1}{2}$, 0.45

B 65%, $\frac{5}{8}$, 0.58, $\frac{1}{2}$, 49%, 0.45

C $\frac{5}{8}$, 0.58, $\frac{1}{2}$, 0.45, 65%, 0.45

D 65%, $\frac{5}{8}$, 0.58, $\frac{1}{2}$, 0.45, 49%

2D

2 The table shows the grades 12 students earned on a recent science test.

Science Test Grades			
88	84	64	56
92	72	68	60
80	96	96	76

What is the range of the grades?

F 40 **G** 78 **H** 12 **J** 46

12C

3 Tyler took 10 shots on goal during a hockey game. Of those 10 shots, 2 resulted in a score. What percentage of the shots on goal resulted in a score?

A 12% **B** 20% **C** 2% **D** 25%

4G

5 The tables show the relationship between x and y for data sets I and II.

Data Set I

x	y
1	3.5
2	4.5
3	5.5
4	6.5

Data Set II

x	y
1	2
2	3
3	4
4	5

Which statements describe the relationship between x and y in each of the data sets?

F Data Set I shows an additive relationship in which y is 2.5 more than x. Data Set II shows a multiplicative relationship in which y is 2 times x.

G Both data sets show multiplicative relationships. In Data Set I, y is 3.5 times x. In Data Set II, y is 2 times x.

H Data Set I shows a multiplicative relationship in which y is 3.5 times x. Data Set II shows an additive relationship in which y is 1 more than x.

J Both data sets show additive relationships. In Data Set I, y is 2.5 more than x. In Data Set II, y is 1 more than x.

4A

1 Zane can fly his drone no longer than 22.5 minutes when its battery is fully charged. After fully charging the drone, Zane flew it for 9.2 minutes. Which inequality represents all possible values of m, the number of minutes Zane can fly his drone with the remaining charge?

A $m \leq 31.7$ **C** $m \leq 13.3$

B $m \geq 13.3$ **D** $m \geq 31.7$

10A

3 Which expressions are equivalent to the expression shown here?

$$4^3 \times 2(-4) + 2(15 - 7)$$

*Select **TWO** correct answers.*

- ☐ $4^3 \times 2 + 16$
- ☐ $-512 + 30 - 7$
- ☐ $64 \times (-8) + 2(8)$
- ☐ $64 \times (-8) + 10$
- ☐ $-512 + 16$

7A

5 Bianca wrote the expression shown here.

$$3 \div \frac{7}{8}$$

Which expression is equivalent to Bianca's expression?

A $3 \bullet \frac{7}{8}$

B $\frac{1}{3} \div \frac{7}{8}$

C $\frac{1}{3} \bullet \frac{7}{8}$

D $3 \bullet \frac{8}{7}$

3A

2 A sparrow and a cardinal are eating sunflower seeds from a bird feeder.

- The sparrow eats 8 seeds in 5 minutes.
- The cardinal eats 7 seeds in 3 minutes.

Based on these rates, which statement is true?

F The cardinal can eat 11 more seeds than the sparrow in 15 minutes.

G The sparrow can eat 1 more seed than the cardinal in 1 minute.

H The cardinal can eat 21 seeds in 6 minutes.

J The sparrow can eat 4 seeds in 2 minutes

4B

4 Mr. Chan had $2,500.75 in his checking account on the morning of January 1. He recorded two transactions in his check register later that day.

- Withdrew $372.40 (electric bill)
- Deposited $792.27 (paycheck)

Complete Mr. Chan's check register to show the balance after each transaction.

Move the correct answer to each box. Not all answers will be used.

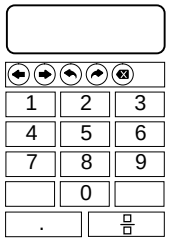
1,336.08 | 1,164.67 | 2,080.88 | 2,128.35 | 2,873.15 | 2,920.62

Date	Description	Deposits ($)	Withdrawals ($)	Balance ($)
1/1				2,500.75
1/1	Electric bill		372.40	
1/1	Paycheck	792.27		

14C

1 Latonya made $7\frac{1}{2}$ batches of cookies. She used 6.25 ounces of flour to make each batch. What is the total number of ounces of flour Latonya used to make the cookies?

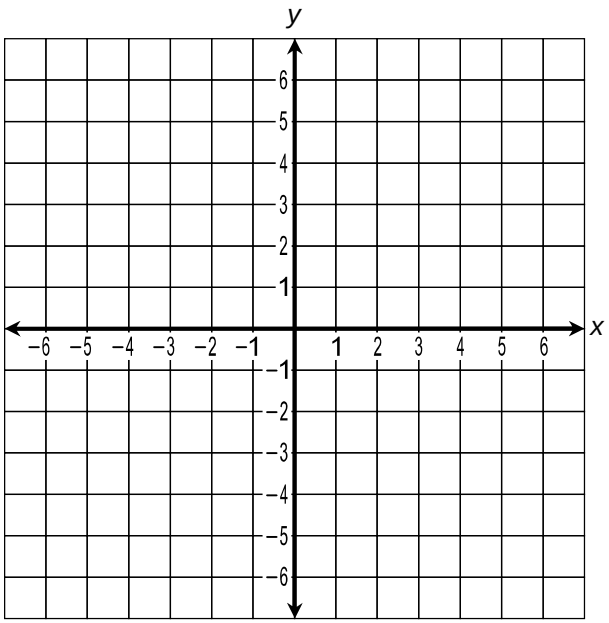
Enter your answer in the box.



3E

2 What is the location of point (−4, 3)?

Plot the point on the coordinate grid.



11A

3 Harish has $75. He will use the expression shown to calculate the number of dollars he should receive in change after buying some items at a store.

$$75 – (9 + 3(3) + 17 + 4(5) + 6)$$

How much change should Harish receive?

A $12 **B** $14 **C** $28 **D** $24

3D

4 Carissa fired an arrow from a bow. The arrow traveled 125 meters. Measured in kilometers, how far did the arrow travel?

F 1.25 km **G** 0.0125 km **H** 125.000 km **J** 0.125 km

4H

5 An artist creates 12 sketches for every 3 paintings she creates. Which ratio could represent the number of sketches to paintings the artist creates?

A 48:12 **B** 36:6 **C** 144:9 **D** None of these

4C

6 A fruit punch recipe requires 12 ounces of soda water be used for every 8 ounces of fruit juice used. Which table shows this relationship?

F

Ounces of Fruit Juice	Ounces of Soda Water
16	24
24	36
32	48
40	60

H

Ounces of Fruit Juice	Ounces of Soda Water
16	48
24	72
32	96
40	120

G

Ounces of Fruit Juice	Ounces of Soda Water
16	2
24	3
32	4
40	5

J

Ounces of Fruit Juice	Ounces of Soda Water
16	32
24	48
32	64
40	80

5A

1 Which inequality is true if $x = 1.5$?

A $9.5 > 9x$

B $7.5x \leq 11.25$

C $12 < 5x$

D $8x \geq 14$

10B

3 Which answer choice represents an equation?

F The sum of x and 2 multiplied by 6

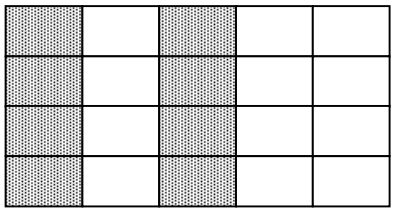
G Nine divided by 3 equals x

H The product of 4 and x

J Twelve divided by 3 plus 5

7B

2 Part of a grid is shaded as shown here.



What percentage and fraction represent the part of the grid that is shaded?

Move the correct answer to each box. Not all answers will be used.

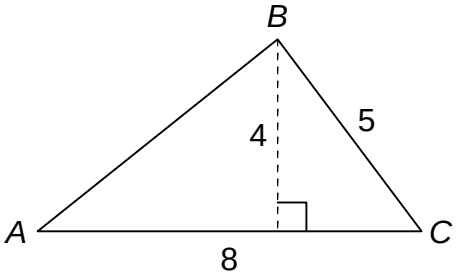
80%	40%	33%
$\frac{2}{3}$	$\frac{6}{10}$	$\frac{2}{5}$

Fraction: ⬚

Percentage: ⬚

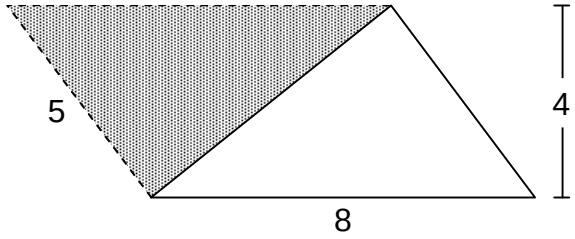
5C

4 Triangle ABC is shown.

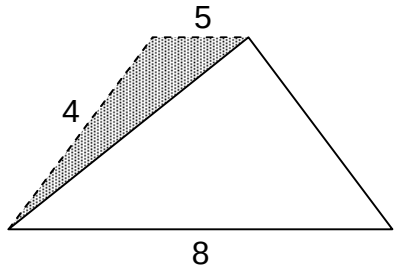


Which figure best models the area formula for triangle ABC?

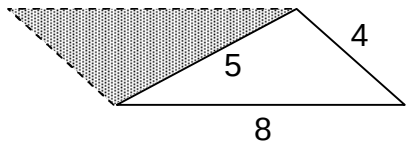
A



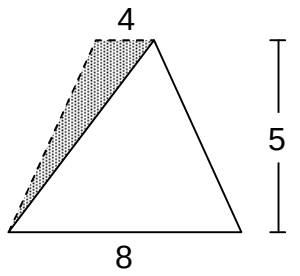
C



B

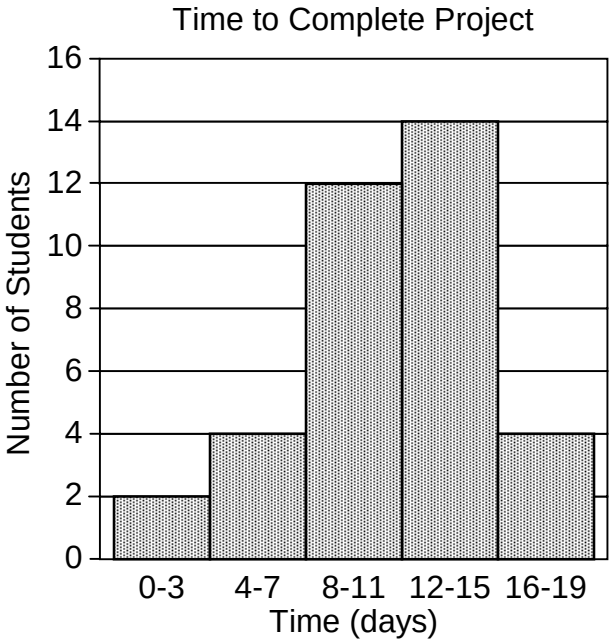


D



8B

1 Each of the students in a science class completed a research project. The histogram summarizes the amount of time each student took to complete the project.



Based on the histogram, which statement is true?

A Eight to 11 students completed the project in 12 days.

B None of the students took more than 2 weeks to complete the project.

C More than half of the students completed the project in less than 12 days.

D One third of the students completed the project in 8 to 11 days.

13A

2 The stem and leaf plot shows the number of ounces of water that 20 horses drank this morning.

Stem	Leaf
0	8 9
1	2 4 4 5 8 9 9
2	0 2 3 3 7 8
3	1 5 6 8
4	2

2|3 means 23 fluid ounces.

Which statement is best supported by the data in the plot?

F Exactly one half of the horses drank fewer than 20 ounces of water.

G None of the horses drank 20 ounces of water.

H Twice as many horses drank 10 to 20 ounces of water as horses that drank 30 to 40 ounces of water.

J More than half of the horses drank more than 30 ounces of water.

13A

3 A group of sixth-grade students was asked to name their favorite subject given five choices. The table shows the number of students who chose each subject.

Subject	Number of Students
History	12
Mathematics	9
Literature	10
Science	8
P.E.	11

Which statement is NOT supported by the information in the table?

A Literature is the favorite subject for 20% of the students.

B Fewer than 15% of the students chose science.

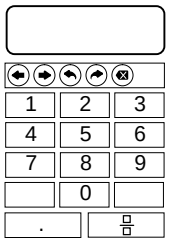
C Mathematics is the favorite subject for 18% of the students.

D History is associated with the mode of the data.

12D

1 A rectangular prism has a base that measures 3.5 cm by 3.25 cm. The height of the prism is 6 cm. What is the volume of the prism in cubic centimeters?

Enter your answer in the box.



8D

2 The table shows the number of extra-credit points a student will earn by answering extra-credit questions on a math test.

Number of Questions	Number of Points
0	0
1	5
2	10
3	15
4	20

Which list shows only the dependent quantities in the table?

A 0, 1, 2, 3, 4 **C** 5, 10, 15, 20

B 0, 5, 10, 15, 20 **D** None of these

6A

3 Which expression is equivalent to the expression $9(13 + 7x)$?

F $9 \cdot 20x$ **G** $22 + 7x$ **H** $9 \cdot 13 + 9 \cdot 7x$ **J** $9 \cdot 13 + 7x$

7D

4 Which set of angle measures could be the angle measures of a triangle?

A 80°, 80°, 80° **B** 58°, 64°, 60° **C** 120°, 120°, 140° **D** 51°, 60°, 69°

8A

5 The area of a rectangular lid on a box measures 139.5 square inches. If the width of the lid is 9 inches, what is the length of the lid?

F 148.5 in. **G** 15.5 in. **H** 1,255.5 in. **J** 130.5 in.

8D

6 At a candy store, Abigail bought 9 jellybeans for a total cost of $1.17. Each jellybean cost the same amount. Which table shows the relationship between the number of jellybeans Abigail bought and the total cost?

A

Number of Jellybeans	Cost (dollars)
1	0.17
2	0.34
3	0.51
4	0.68

C

Number of Jellybeans	Cost (dollars)
2	0.38
4	0.76
6	1.14
8	1.52

B

Number of Jellybeans	Cost (dollars)
2	0.24
4	0.48
6	0.72
8	0.96

D

Number of Jellybeans	Cost (dollars)
1	0.13
2	0.26
3	0.39
4	0.52

6C