Example Items

Mathematics 8

Mathematics 8 Example Items are a **representative set** of items for the ACP. Teachers may use this set of items along with the test blueprint as guides to prepare students for the ACP. On the last page, the correct answer, content SE and SE justification are listed for each item.

The specific part of an SE that an Example Item measures is NOT necessarily the only part of the SE that is assessed on the ACP. None of these Example Items will appear on the ACP.

Teachers may provide feedback regarding Example Items.

(1) Download the Example Feedback Form and email it. The form is located on the homepage of Assessment.dallasisd.org.

OR

(2) To submit directly, click "Example Feedback" **after** you login to the Assessment website.

First Semester
2018–2019
Code #: 1081

STAAR GRADE 8 MATHEMATICS REFERENCE MATERIALS

STAAR State of Texas Assessments of Academic Readiness

LINEAR EQUATIONS

Slope-intercept form	$y = mx + b$
Direct variation	$y = kx$
Slope of a line	$m = \frac{y_2 - y_1}{x_2 - x_1}$

CIRCUMFERENCE

Circle	$C = 2\pi r$	or	$C = \pi d$

AREA

Triangle	$A = \frac{1}{2}bh$
Rectangle or parallelogram	$A = bh$
Trapezoid	$A = \frac{1}{2}(b_1 + b_2)h$
Circle	$A = \pi r^2$

SURFACE AREA

	Lateral	Total
Prism	$S = Ph$	$S = Ph + 2B$
Cylinder	$S = 2\pi rh$	$S = 2\pi rh + 2\pi r^2$

VOLUME

Prism or cylinder	$V = Bh$
Pyramid or cone	$V = \frac{1}{3}Bh$
Sphere	$V = \frac{4}{3}\pi r^3$

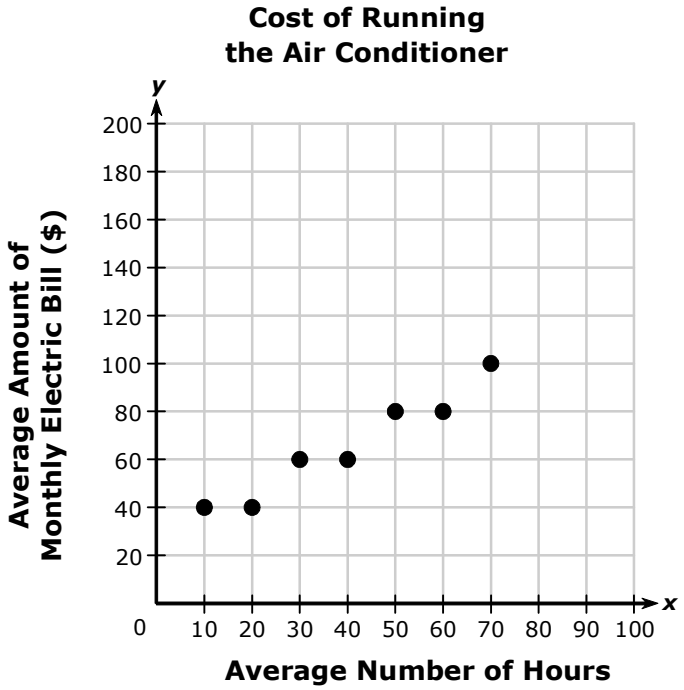
ADDITIONAL INFORMATION

Pythagorean theorem	$a^2 + b^2 = c^2$
Simple interest	$I = Prt$
Compound interest	$A = P(1 + r)^t$

MIDDLE SCHOOL

EXAMPLE ITEMS Mathematics 8, Sem 1

1 Green & Sons Energy company collected data from its customers. The scatter plot compares the average number of hours a customer runs their air conditioner with the average amount of their monthly electric bill.



Based on the data in the table, predict the amount a customer would pay if they run their air conditioner for 90 hours in July.

A $100

B $120

C $140

D $160

2 Sammy opened a college savings account. She opened the account with $85, and then deposited $45 each month. Which equation best models the relationship between m, the number of monthly deposits Sammy made, and S, the total amount in Sammy's college savings account?

A $S = 85m - 45$

B $S = 45m - 85$

C $S = 85m + 45$

D $S = 45m + 85$

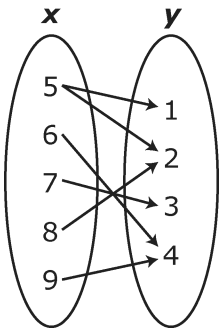
Dallas ISD - Example Items

EXAMPLE ITEMS Mathematics 8, Sem 1

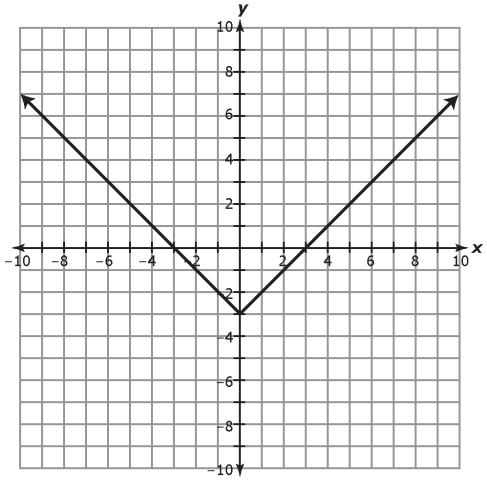
3 Which representation does **not** show y as a function of x?

A $\{(2,-3),(-3,6),(6,-3),(4,2)\}$

B



C

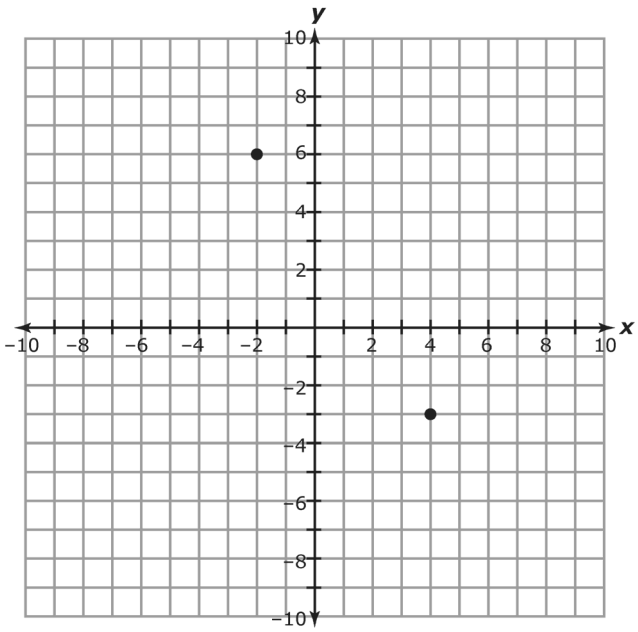


D

x	*y*
2	1
4	3
6	5
8	3
10	1

EXAMPLE ITEMS Mathematics 8, Sem 1

4 Two points are graphed on the coordinate plane as shown.



Which equation represents the line that passes through these two points?

A $y = \frac{2}{3}x + 3$

B $y = -\frac{2}{3}x + 3$

C $y = \frac{3}{2}x + 3$

D $y = -\frac{3}{2}x + 3$

5 Gabriel invested $8,000 in an account that earns 4.5% interest compounded annually. If Gabriel does not make any additional deposits or withdrawals, approximately how much interest will he earn on his investment at the end of 5 years?

A $1,800.00

B $1,969.46

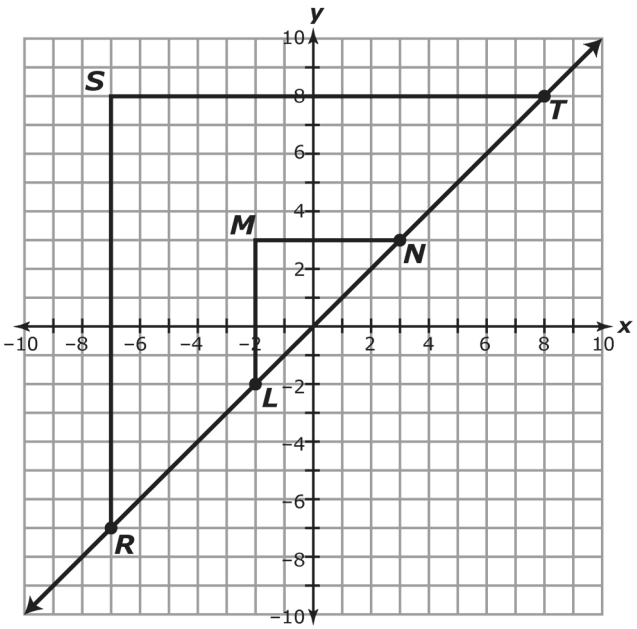
C $9,800.00

D $9,969.46

Dallas ISD - Example Items

EXAMPLE ITEMS Mathematics 8, Sem 1

6 Triangles *LMN* and *RST* are similar right triangles.



Based on this information which statement is true?

A The slope of hypotenuse *RT* of triangle *RST* is more steep than the slope of hypotenuse *LN* of triangle *LMN*.

B The slope of hypotenuse *RT* of triangle *RST* is less steep than the slope of hypotenuse *LN* of triangle *LMN*.

C The slope of hypotenuse *RT* of triangle *RST* is equal to the slope of hypotenuse *LN* of triangle *LMN*.

D The slope of hypotenuse *RT* of triangle *RST* has no relationship to the slope of hypotenuse *LN* of triangle *LMN*.

7 Flynn is ordering t-shirts for all 8^{th} graders at his school. T-shirts R-Us charges $6.25 per shirt with a one-time embroidery fee of $19. T-shirts Galore charges $4.75 per shirt with a one-time embroidery fee of $43. Which inequality can be used to find x, the minimum number of shirts that can be ordered so that the total charge at T-shirts R-Us is less than the total charge at T-shirts Galore?

A $6.25 + 19x < 4.75 + 43x$

B $6.25x + 19 < 4.75 + 43x$

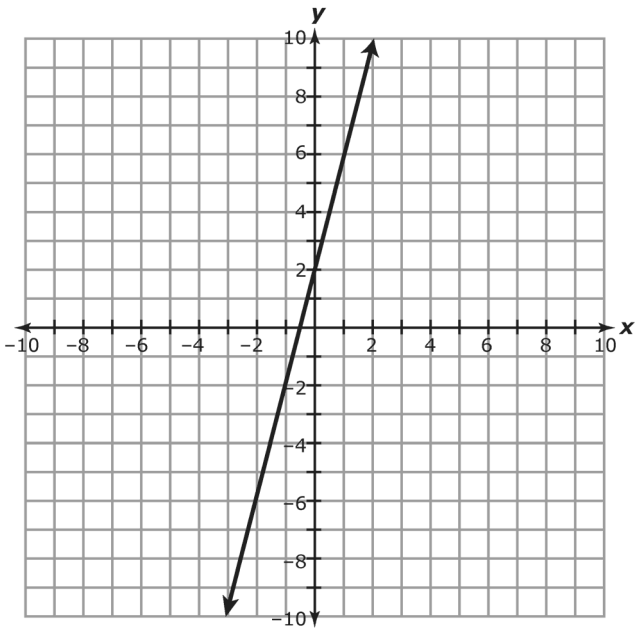
C $6.25 + 19x < 4.75x + 43$

D $6.25x + 19 < 4.75x + 43$

Dallas ISD - Example Items

EXAMPLE ITEMS Mathematics 8, Sem 1

8 A line is graphed on the coordinate grid as shown.



Which equation is represented by this graph?

A $y = \frac{1}{4}x + 2$

B $y = -\frac{1}{4}x + 2$

C $y = 4x + 2$

D $y = -4x + 2$

9 Noah has a total of $1,000 to deposit into two different savings accounts.

- Noah deposits $500 into Account A, which earns 5% annual simple interest.
- He deposits $500 into Account B, which earns $4\frac{1}{2}\%$ interest compounded annually.

If Noah does not make any additional deposits or withdrawals, what is the total amount of money he will have at the end of 5 years?

A $1,250.00

B $1,248.09

C $625.00

D $623.09

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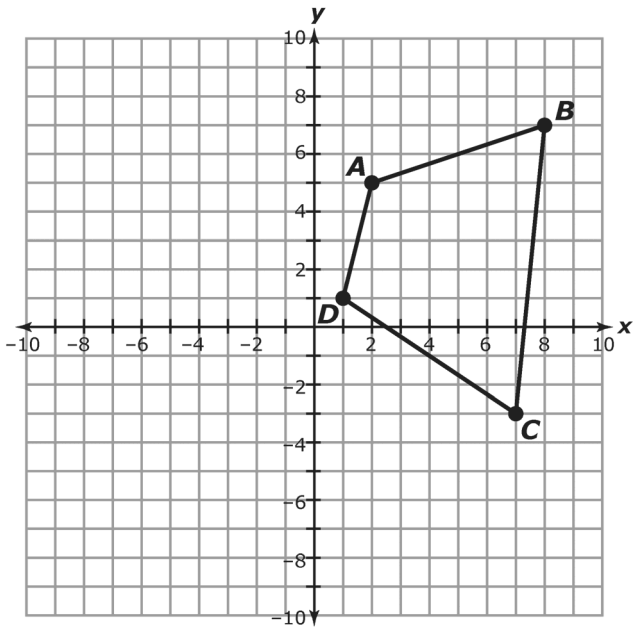
EXAMPLE ITEMS Mathematics 8, Sem 1

10 Quadrilateral *ABCD* has vertices at *A*(2, 5), *B*(8, 7), *C*(7, –3), and *D*(1, 1) as shown on the coordinate grid.



Quadrilateral *ABCD* is reflected across the *x*-axis to create quadrilateral *A'B'C'D'*. Which algebraic rule describes this transformation?

A $(x, y) \rightarrow (x, -y)$

B $(x, y) \rightarrow (-x, y)$

C $(x, y) \rightarrow (y, -x)$

D $(x, y) \rightarrow (-y, x)$

11 Mr. Tomlinson asks his students to study the numbers shown.

$$6.71\,,\ -7.8\,,\ -\frac{22}{3}\,,\ 76\%\,,\ 6\frac{7}{9}$$

Which list shows the numbers in order from least to greatest?

A $-7.8\,,\ -\frac{22}{3}\,,\ 76\%\,,\ 6.71\,,\ 6\frac{7}{9}$

B $6\frac{7}{9}\,,\ 6.71\,,\ 76\%\,,\ -\frac{22}{3}\,,\ -7.8$

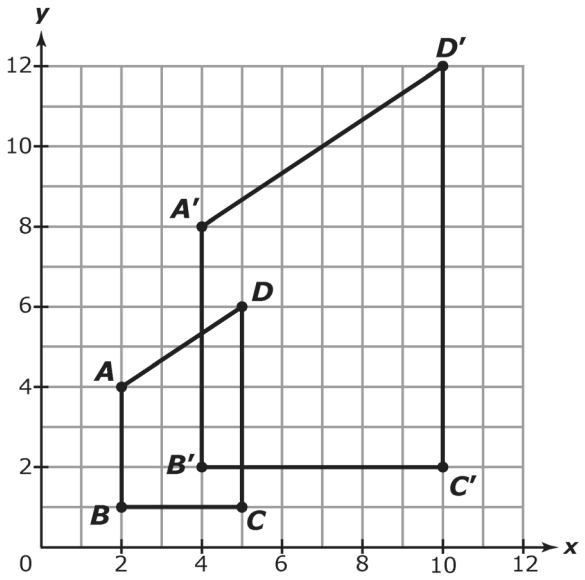
C $-\frac{22}{3}\,,\ -7.8\,,\ 6.71\,,\ 6\frac{7}{9}\,,\ 76\%$

D $76\%\,,\ 6\frac{7}{9}\,,\ 6.71\,,\ -7.8\,,\ -\frac{22}{3}$

Dallas ISD - Example Items

EXAMPLE ITEMS Mathematics 8, Sem 1

12 Quadrilateral *ABCD* is dilated with the origin as the center of dilation to create quadrilateral *A'B'C'D'*.



Which algebraic rule represents the dilation applied to quadrilateral *ABCD* to create quadrilateral *A'B'C'D'*?

A $(x, y) \rightarrow \left(\frac{1}{2}x, \frac{1}{2}y\right)$

B $(x, y) \rightarrow (2x, 2y)$

C $(x, y) \rightarrow (x + 2, y + 1)$

D $(x, y) \rightarrow (x - 2, y - 1)$

13 Which situation is best represented by the equation $70 + 25x = 45 + 30x$?

A Flush City Plumbing charges a $70 service call fee plus $25 per hour. All Stopped Up Plumbing charges a $45 service call fee plus $30 per hour. What is *x*, the number of hours that need to pass for both companies to charge the same amount?

B Flush City Plumbing charges a $70 service call fee plus $25 per hour. All Stopped Up Plumbing charges a $30 service call fee plus $45 per hour. What is *x*, the number of hours that need to pass for both companies to charge the same amount?

C Flush City Plumbing charges a $25 service call fee plus $70 per hour. All Stopped Up Plumbing charges a $30 service call fee plus $45 per hour. What is *x*, the number of hours that need to pass for both companies to charge the same amount?

D Flush City Plumbing charges a $25 service call fee plus $70 per hour. All Stopped Up Plumbing charges a $45 service call fee plus $30 per hour. What is *x*, the number of hours that need to pass for both companies to charge the same amount?

Dallas ISD - Example Items

EXAMPLE ITEMS Mathematics 8, Sem 1

14 The table shows the number of Instagram followers for 8 students.

Student	Followers
Manuel	682
Alexandra	787
Erick	956
Ashley	502
Adrian	972
Marisol	817
Ricardo	305
Judith	281

What is the mean absolute deviation for this set of data?

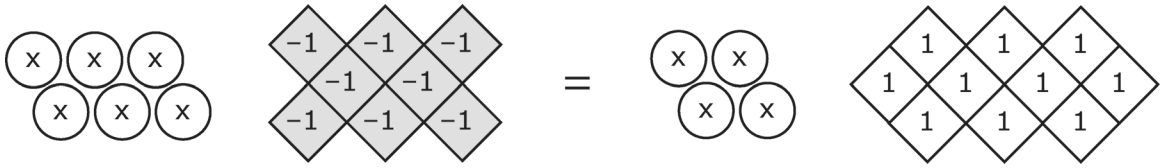
A 662.75

B 0.025

C 225.06

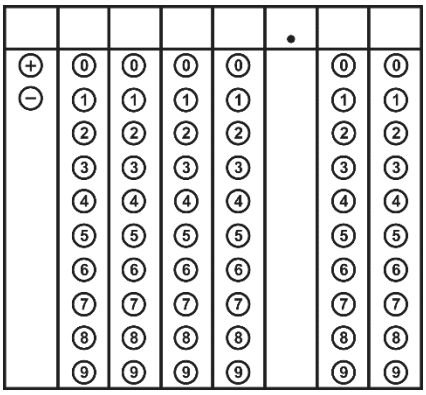
D 1800.5

15 The model of an equation is shown.



What value of x makes the equation true?

Record the answer and fill in the bubbles on the grid provided. Be sure to use the correct place value.



EXAMPLE ITEMS Mathematics 8, Sem 1

16 Jerry wants to purchase a new iPhone. At Phabulous Phones, he will pay a deposit plus a monthly fee. The table shows the total amount Jerry will have paid for his new phone at various times over the next 24 months.

Month	Total Amount Paid
6	$494
8	$592
10	$690
12	$788
24	$1,376

Based on the information in the table, how much does Jerry pay for the deposit and the monthly fee?

A The deposit is $49, and the monthly fee is $200.

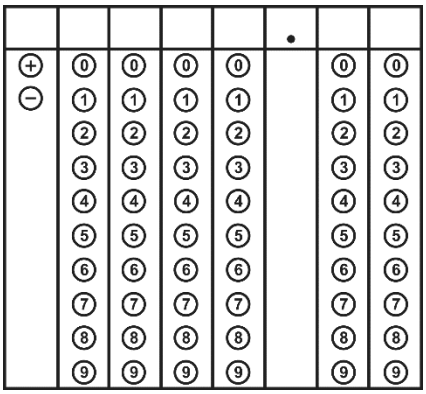
B The deposit is $98, and the monthly fee is $396.

C The deposit is $200, and the monthly fee is $49.

D The deposit is $396, and the monthly fee is $98.

17 Ivan plans to borrow $2,000 from the bank to pay for his vacation in Hawaii. Bank of America charges 14.5% simple interest on a 3-year loan. Wells Fargo charges 12% simple interest on a 4-year loan. What is the difference in the amount of interest Ivan would have to pay for each of these two loans?

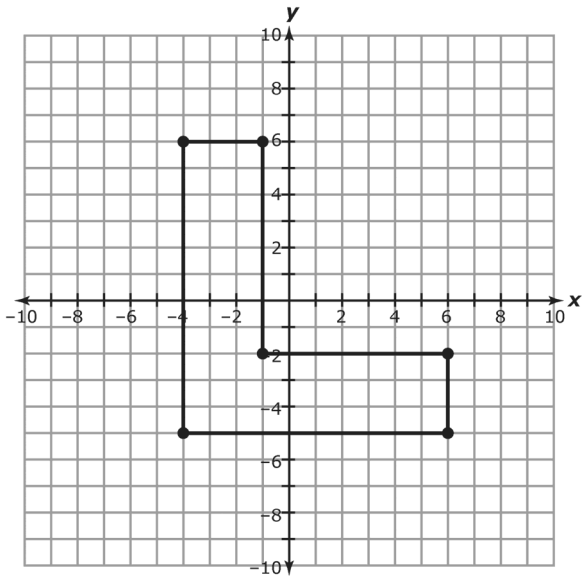
Record the answer and fill in the bubbles on the grid provided. Be sure to use the correct place value.



Dallas ISD - Example Items

EXAMPLE ITEMS Mathematics 8, Sem 1

18 A figure is graphed on a coordinate grid as shown.



If the figure is reflected across the y-axis to create a new image, which rule describes this transformation?

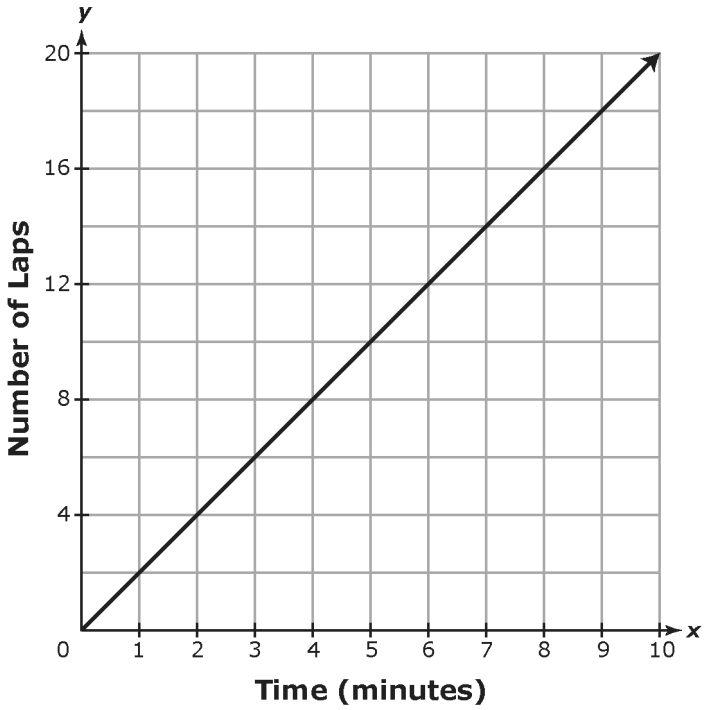
A $(x, y) \rightarrow (y, -x)$

B $(x, y) \rightarrow (-x, y)$

C $(x, y) \rightarrow (x, -y)$

D $(x, y) \rightarrow (-y, x)$

19 When the weather is bad, the cross country team runs laps in the gym. The graph shows the number of laps Zariah runs over time.



Which statement describes the rate of change for this situation?

A Zariah runs 20 laps per minute.

B Zariah runs 4 laps per minute.

C Zariah runs 2 laps per minute.

D Zariah runs 1 lap per minute.

EXAMPLE ITEMS Mathematics 8 Key, Sem 1

Item#	Key	SE	SE Justification
1	B	8.5D	Use a trend line that approximates the linear relationship between bivariate sets of data to make predictions.
2	D	8.5I	Write an equation in the form $y = mx + b$ to model a linear relationship between two quantities [from] verbal representations.
3	B	8.5G	Identify functions using sets of ordered pairs, tables, mappings, and graphs.
4	D	8.5I	Write an equation in the form $y = mx + b$ to model a linear relationship between two quantities using verbal, numerical, tabular, and graphical representations.
5	B	8.12D	Calculate compound interest earnings.
6	C	8.4A	Use similar right triangles to develop an understanding that slope, m, given as the rate comparing the change in y-values to the change in x-values, $(y_2 - y_1)/(x_2 - x_1)$, is the same for any two points (x_1, y_1) and (x_2, y_2) on the same line.
7	D	8.8A	Write one variable inequalities with variables on both sides that represent problems using rational number coefficients and constants.
8	C	8.5I	Write an equation in the form $y = mx + b$ to model a linear relationship between two quantities using verbal, numerical, tabular, and graphical representations.
9	B	8.12D	Calculate and compare simple interest and compound interest earnings.
10	A	8.10C	Explain the effect of translations, reflections over the x- or y-axis, and rotations limited to 90°, 180°, 270°, and 360° as applied to two-dimensional shapes on a coordinate plane using an algebraic representation.
11	A	8.2D	Order a set of real numbers arising from mathematical and real-world contexts.
12	B	8.3C	Use an algebraic representation to explain the effect of a given positive rational scale factor applied to two dimensional figures on a coordinate plane with the origin as the center of dilation.
13	A	8.8B	Write a corresponding real-world problems when given a one-variable equation with variables on both sides of the equal sign using rational number coefficients and constants.
14	C	8.11B	Determine the mean absolute deviation and use this quantity as a measure of the average distance data are from the mean using a data set of no more than 10 data points.
15	9	8.8C	Model and solve one-variable equations with variables on both sides of the equal sign that represent mathematical and real-world problems using rational number coefficients and constants.
16	C	8.4C	Use data from a table or graph to determine the rate of change or slope and y-intercept in mathematical and real-world problems.
17	90	8.12A	Solve real-world problems comparing how interest rate affects the cost of credit.
18	B	8.10C	Explain the effect of reflections over the x- or y-axis as applied to two-dimensional shapes on a coordinate plane using an algebraic representation.
19	C	8.4B	Graph proportional relationships, interpreting the unit rate as the slope of the line that models the relationship.