Mathematics

Grade 8

Scoring Protocol
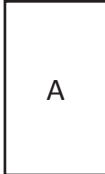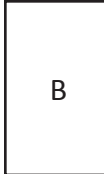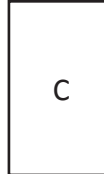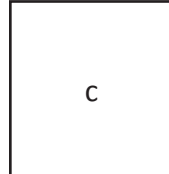
2017-2018

Item 1	Option:	A	B	C	Correct	Scoring (0/1)

L - Here is the square root of 9. The square root of nine is the number that equals nine when multiplied by itself. (Point to student materials.) Which equals nine: 1 X 1, 2 X 2, or 3 X 3?

| | 1 X 1 | 2 X 2 | 3 X 3 | c | |

Scoring: 0 = incorrect; 1 = correct
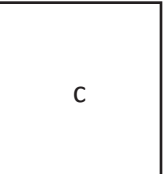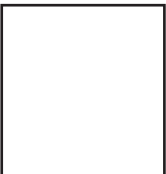
Item 2	Option:	A	B	C	Correct	Scoring (0/1)

L - Here is a triangle, ABC. (Point to student materials.) Congruent triangles are the same. Which triangle is congruent with ABC: DEF, GHI, or JKL?

| | DEF | GHI | JKL | a | |

Scoring: 0 = incorrect; 1 = correct
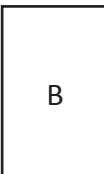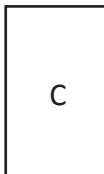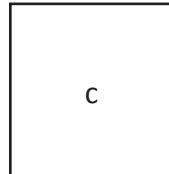
Item 3	Option:	A	B	C	Correct	Scoring (0/1)

M - Here are three workers. They each have different positions and earn different pay per hour. (Point to student materials.) Person A is earning $10 per hour, Person B is earning $20 per hour, while Person C is earning $30 per hour. Which person is earning the most per hour: A, B, or C?

worker positions not indicated, only wages given

| | A | B | C | c | |

Scoring: 0 = incorrect; 1 = correct
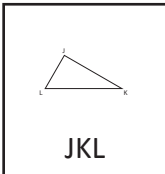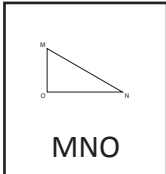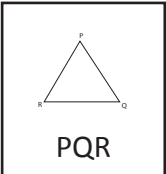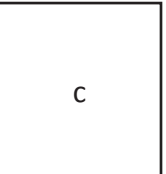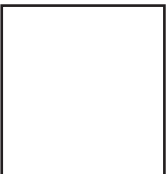
Item 4	Option:	A	B	C	Correct	Scoring (0/1)

L - Here is a table showing what happens to y when x equals 1, 2, 3, and 5. (Point to student materials.) What is y when x = 4: 2, 6, or 8?

| | 2 | 6 | 8 | c | |

Scoring: 0 = incorrect; 1 = correct

Item 5	Option:	A	B	C	Correct	Scoring (0/1)

L - Here are three trains moving at different speeds. (Point to student materials.) Train A is going 5 miles per hour, Train B is traveling 15 miles per hour, and Train C is traveling 20 miles per hour. Which train is going the fastest: A, B, or C?

trains not shown

| | A | B | C | c | |

Scoring: 0 = incorrect; 1 = correct

Item 6	Option:	A	B	C	Correct	Scoring (0/1)

L - Here is a triangle, GHI. (Point to student materials.) A figure is similar to another if it has the same shape, but is a different size. Which triangle here has the same shape as triangle GHI, but is a different size: JKL, MNO, or PQR?

| | JKL | MNO | PQR | c | |

Scoring: 0 = incorrect; 1 = correct

Item 7	Option:	A	B	C	Correct	Scoring (0/1)
H - Here is a math problem. (Point to student materials.) Cara had .50 of a cookie and Sally ate .40 of the whole cookie. How much cookie is left: .10, .20, or .30?		0.10	0.20	0.3	a	

Scoring: 0 = incorrect; 1 = correct

fraction circle is omitted

Item 8	Option:	A	B	C	Correct	Scoring (0/1)
H - Here are three motorcycles moving at different speeds. (Point to student materials.) Motorcycle A is going 48 miles per hour, Motorcycle B is going 49 miles per hour, and Motorcycle C is going 50 miles per hour. Which motorcycle is going the slowest: A, B, or C?		A	B	C	a	

Scoring: 0 = incorrect; 1 = correct

Item 9	Option:	A	B	C	Correct	Scoring (0/1)
H - Look at the table. (Point to student materials.) What is y when x = 12: 22, 24, or 26?		22	24	26	b	

Scoring: 0 = incorrect; 1 = correct

Item 10	Option:	A	B	C	Correct	Scoring (0/1)
H - Here is a triangle, ABC. (Point to student materials.) A figure is similar to another if it has the same shape, but is a different size. Which triangle here has the same shape as triangle ABC, but is a different size: A, B, or C?		A	B	C	a	
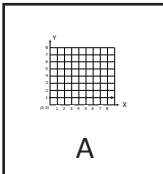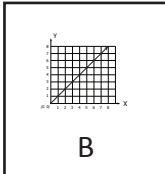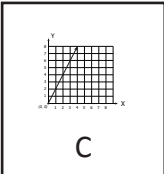
Scoring: 0 = incorrect; 1 = correct

Item 11	Option:	A	B	C	Correct	Scoring (0/1)
H - Here are three lines. (Point to student materials.) When a line has zero slope, it is flat. Which line has a zero slope: A, B, or C?		A	B	C	c	

Scoring: 0 = incorrect; 1 = correct

Item 12	Option:	A	B	C	Correct	Scoring (0/1)
L - Here is a math problem. (Point to student materials.) Mark eats 1/2 of the sandwich and Bob eats 1/2 of the sandwich. How much of the sandwich is left: 0, 0.5, or 1?		0	0.5	1	a	

Scoring: 0 = incorrect; 1 = correct

no picture is shown

Item 13	Option:	A	B	C	Correct	Scoring (0/1)
L - Here are three line graphs. (Point to student materials.) Slope is how steep a line is. Zero slope means that the line is flat. Which line has a slope of zero: A, B, or C?		A	B	C	a	

Scoring: 0 = incorrect; 1 = correct

Item 14	Option:	A	B	C	Correct	Scoring (0/1)
L - Here are two similar triangles, triangle ABC and triangle DEF. (Point to student materials.) Which line corresponds to line AC: DE, DF, or EF?		$\overline{DE}$	$\overline{DF}$	$\overline{EF}$	b	
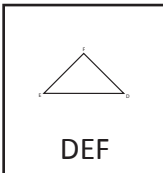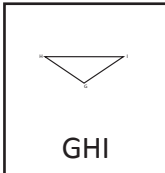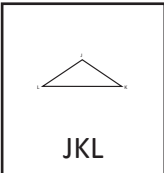
Scoring: 0 = incorrect; 1 = correct

Item 15	Option:	A	B	C	Correct	Scoring (0/1)
M - Here is a number to the second power. (Point to student materials.) A number to the second power is that number times itself. What is 2 to the second power: 2, 4, or 8?		2	4	8	b	

Scoring: 0 = incorrect; 1 = correct

Item 16	Option:	A	B	C	Correct	Scoring (0/1)
H - Here are three trucks moving at different speeds. (Point to student materials.) Truck A is going 90 miles per hour, Truck B is going 84 miles per hour, and Truck C is going 85 miles per hour. Which truck is going the fastest: A, B, or C?		A	B	C	a	

Scoring: 0 = incorrect; 1 = correct

Item 17	Option:	A	B	C	Correct	Scoring (0/1)
M - Here is a triangle, ABC. (Point to student materials.) Congruent triangles are the same. Which triangle is congruent with ABC: DEF, GHI, or JKL?		DEF	GHI	JKL	a	

Scoring: 0 = incorrect; 1 = correct

Item 18	Option:	A	B	C	Correct	Scoring (0/1)
H - Here is a large number, 700. (Point to student materials.) Here are three numbers written in scientific notation. The power tells us how many zeros to add to the number. Which number here equals 700: 9 times 10 to the second power, 8 times ten to the second power, or 7 times ten to the second power?		9×10^2	8×10^2	7×10^2	c	

Scoring: 0 = incorrect; 1 = correct

Item 19	Option:	A	B	C	Correct	Scoring (0/1)
H - Here is a math problem with mixed numbers. (Point to student materials.) Jessie has 4 1/4 cookies and Jane has 4 1/4 cookies. What is the total number of cookies: 6, 7 1/2, or 8 1/2?		6	7 1/2	8 1/2	c	

Scoring: 0 = incorrect; 1 = correct

Item 20	Option:	A	B	C	Correct	Scoring (0/1)
H - Here is a box that is 11 feet long, 2 feet wide, and 3 feet high. (Point to student materials.) How many cubic feet is this box: 60, 66, 82?		the box is shown without interior unit lines 60	66	82	b	

Scoring: 0 = incorrect; 1 = correct

Item 21	Option:	A	B	C	Correct	Scoring (0/1)
L - Here are three lines. (Point to student materials.) When slope is positive, the line goes up to the right. Which line has positive slope: A, B, or C?		A	B	C	b	

Scoring: 0 = incorrect; 1 = correct

Item 22	Option:	A	B	C	Correct	Scoring (0/1)
H - Here is a box that is 5 feet long, 3 feet wide, and 6 feet high. (Point to student materials.) How many cubic feet is this box: 90, 100, or 110?		the box is shown without inside unit lines 90	100	110	a	
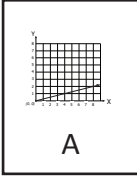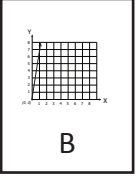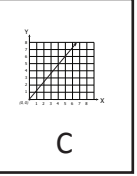
Scoring: 0 = incorrect; 1 = correct

Item 23	Option:	A	B	C	Correct	Scoring (0/1)
M - Here is the number 35 to the second power. (Point to student materials.) Does the second power make 35 smaller, larger, or stay the same?		smaller	larger	same	b	

Scoring: 0 = incorrect; 1 = correct

Item 24	Option:	A	B	C	Correct	Scoring (0/1)
H - Here is a line graph of the relationship between hours of exercise and number of illnesses. (Point to student materials.) Does the line show that getting more exercise is related to increased illness, decreased illness, or leaves illness the same?		increased	decreased	same	b	

Scoring: 0 = incorrect; 1 = correct

Item 25	Option:	A	B	C	Correct	Scoring (0/1)

Item 25
M - Here are three line graphs. (Point to student materials.) Slope is how steep a line is. You find positive slope by counting how many units you go up, and then right from one point to find the next point. Which line has a slope of seven units up, one unit to the right: A, B, or C?
Scoring: 0 = incorrect; 1 = correct

A   B   C   **b**

Item 26	Option:	A	B	C	Correct	Scoring (0/1)

Item 26
M - Here is a line graph of the relationship between hours spent reading and number of pages read. (Point to student materials.) Does the line show that more time spent reading is related to more pages read, fewer pages read, or the same number of pages read?
Scoring: 0 = incorrect; 1 = correct

more   fewer   same   **a**

Item 27	Option:	A	B	C	Correct	Scoring (0/1)

Item 27
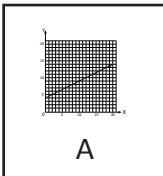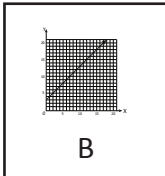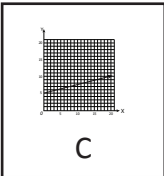L - Here is a right triangle, MNO. (Point to student materials.) Which angle is the right angle in the triangle: angle MNO, angle NOM, or angle OMN?

MNO   NOM   OMN   **c**

Scoring: 0 = incorrect; 1 = correct

Item 28	Option:	A	B	C	Correct	Scoring (0/1)

Item 28
H - Here is a line graph of the relationship between family size and time spent together. (Point to student materials.) Does the line show that a larger family is related to greater time spent together, less time spent together, or the same time spent together?
Scoring: 0 = incorrect; 1 = correct

greater   less   same   **c**

Item 29	Option:	A	B	C	Correct	Scoring (0/1)

Item 29
H - Here is a scatter plot with three lines. (Point to student materials.) The line of best fit is the line that goes through the middle of the data. Which line is the line of best fit: A, B, or C?

A   B   C   **a**

Scoring: 0 = incorrect; 1 = correct

Item 30	Option:	A	B	C	Correct	Scoring (0/1)

Item 30
M - Here are two similar triangles, triangle JKL and triangle DEF. (Point to student materials.) Because the triangles are similar, their corresponding angles are the same. Which angles correspond to angle JKL: angle DEF, angle EDF, or angle DFE?
Scoring: 0 = incorrect; 1 = correct

∠DEF   ∠EDF   ∠DFE   **c**

Item 31	*Option:*	*A*	*B*	*C*	*Correct*	*Scoring (0/1)*
L - Here is a math problem. (Point to student materials.) You sold 0.5 of your whole pie. How much pie do you have left: 0.5, 1.0, or 2.0?		0.5	1.0	2.0	a	

Scoring: 0 = incorrect; 1 = correct

Item 32	*Option:*	*A*	*B*	*C*	*Correct*	*Scoring (0/1)*
H - Here are three line graphs, A, B, and C, and one output table. (Point to student materials.) Which line graph matches the output table: A, B, or C?		A	B	C	a	

Scoring: 0 = incorrect; 1 = correct

Item 33	*Option:*	*A*	*B*	*C*	*Correct*	*Scoring (0/1)*
M - Here is the number 49. (Point to student materials.) Which number equals 49 when multiplied by itself: 4, 7, or 10?		4	7	10	b	

Scoring: 0 = incorrect; 1 = correct

Item 34	*Option:*	*A*	*B*	*C*	*Correct*	*Scoring (0/1)*
H - Here is an equation with the variable x. (Point to student materials.) This says 4x + 2 = 10. Four times what number, plus two, equals ten: 1, 2, or 3?		1	2	3	b	

Scoring: 0 = incorrect; 1 = correct

Item 35	*Option:*	*A*	*B*	*C*	*Correct*	*Scoring (0/1)*
M - Here is a right triangle, LMN. (Point to student materials.) The hypotenuse is the side opposite the right angle. Which line is the hypotenuse in the triangle: A, B, or C?		$\overline{LM}$ A	$\overline{MN}$ B	$\overline{LN}$ C	c	

Scoring: 0 = incorrect; 1 = correct

Item 36	*Option:*	*A*	*B*	*C*	*Correct*	*Scoring (0/1)*
H - Here is an equation with the variable x. (Point to student materials.) This says 5x +3 = 18. Five times what number, plus three, equals 18: 1, 2, or 3?		1	2	3	c	

Scoring: 0 = incorrect; 1 = correct

Item 37	Option:	A	B	C	Correct	Scoring (0/1)

M - Here are two similar triangles, triangle DEF and triangle GHI. (Point to student materials.) Because the triangles are similar, their corresponding angles and line ratios are the same. Which line corresponds to line DF: DF, GI, or HI?
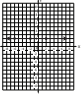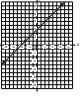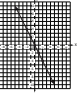
$\overline{DF}$	$\overline{GI}$	$\overline{HI}$	b

Scoring: 0 = incorrect; 1 = correct

Item 38	Option:	A	B	C	Correct	Scoring (0/1)

H - Here are three line graphs, A, B, and C, and one output table. (Point to student materials.) Which line graph matches the output table: A, B, or C?

A   B   C   c

Scoring: 0 = incorrect; 1 = correct

Item 39	Option:	A	B	C	Correct	Scoring (0/1)

M - Here are three line graphs. (Point to student materials.) Slope is how steep a line is. You find positive slope by counting how many units you go up, and then right from one point to find the next point. Zero slope means that the line is flat. Which line has a slope of six up, one to the right: A, B, or C?

A   B   C   a

Scoring: 0 = incorrect; 1 = correct

Item 40	Option:	A	B	C	Correct	Scoring (0/1)

H - Here are two similar triangles, triangle QRS and triangle TUV. (Point to student materials.) Which line corresponds to line RQ: UT, UV, or VT?

$\overline{UT}$	$\overline{UV}$	$\overline{VT}$	a

Scoring: 0 = incorrect; 1 = correct

Item 41	Option:	A	B	C	Correct	Scoring (0/1)

L - Here is a line graph and three output tables: A, B, and C. (Point to student materials.) Which output table matches this line graph: A, B, or C?
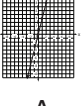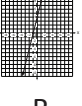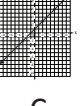
A   B   C   a

Scoring: 0 = incorrect; 1 = correct

Item 42	Option:	A	B	C	Correct	Scoring (0/1)

M - Here are three line graphs, A, B, and C, and one output table. (Point to student materials.) Which line graph matches the output table: A, B, or C?
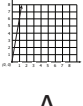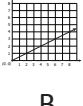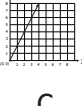

A   B   C   a

Scoring: 0 = incorrect; 1 = correct

Item 43	Option:	A	B	C	Correct	Scoring (0/1)
H - Here is a line graph of the relationship between temperature and hot chocolate sales. (Point to student materials.) Does the line show that lower temperatures are related to an increase in hot chocolate sales, a decrease in hot chocolate sales, or the same? *Scoring:* 0 = incorrect; 1 = correct		increase	decrease	same	a	

Item 44	Option:	A	B	C	Correct	Scoring (0/1)
M - Here are three lines. (Point to student materials.) When slope is negative the line goes down to the right. Which line has a negative slope: A, B, or C? *Scoring:* 0 = incorrect; 1 = correct		A	B	C	a	

Item 45	Option:	A	B	C	Correct	Scoring (0/1)
H - Here is a right triangle. (Point to student materials.) The hypotenuse of a triangle is calculated using the equation $a^2 + b^2 = c^2$. The side lengths of the triangle are 5 and 12. What is the length of the hypotenuse: 5, 13, or 21? *Scoring:* 0 = incorrect; 1 = correct		5	13	21	b	

Item 46	Option:	A	B	C	Correct	Scoring (0/1)
H - Here is an equation with the variable x. (Point to student materials.) This says $6x + 4 = 10$. Six times what number, plus four, equals ten: 1, 2, or 3? *Scoring:* 0 = incorrect; 1 = correct		1	2	3	a	

Item 47	Option:	A	B	C	Correct	Scoring (0/1)
M - Here is a number line. (Point to student materials.) Where is the square root of 49 on the number line: 7, 8, or 9? *Scoring:* 0 = incorrect; 1 = correct		7	8	9	a	

Item 48	Option:	A	B	C	Correct	Scoring (0/1)
H - Here is a number to the third power. (Point to student materials.) A number to the third power is that number multiplied by itself twice. What is 5 to the third power: 50, 125, or 150? *Scoring:* 0 = incorrect; 1 = correct		50	125	150	b	