RULES:

Every team does every problem.

Answers MUST go on your own paper. The group answer goes on the whiteboard.

I will give a 20 second timer. Your group's answer MUST go up when the timer goes off!

Round 1 | Round 2 | Final Jeopardy

$0 Team 1 | $0 Team 2 | $0 Team 3

$0 Team 4 | $0 Team 5 | $0 Team 6

$0 Team 7 | $0 Team 8 | $0 Team 9

Round 2 | Final Jeopardy | Scores

Feel the Power	Don't be Irrational	LINE It Up	FUNctions	Solve It!	Angles and Tri-angles	I Can Transform Ya
$100	$100	$100	$100	$100	$100	$100
$200	$200	$200	$200	$200	$200	$200
$300	$300	$300	$300	$300	$300	$300
$400	$400	$400	$400	$400	$400	$400
$500	$500	$500	$500	$500	$500	$500

$100

How many mistakes are there? Describe it/them.

Ling is finding the volume of a cube with an edge length of $5ab^3$. Her work is shown. 8.EE.1

Part A:

Step 1 $V = (5ab^3)^3$

Step 2 $V = 5^3(a)^3(b^3)^3$

Step 3 $V = 15a^3b^6$

$100

Part A:

Step 1 $V = (5ab^3)^3$

Step 2 $V = 5^3(a)^3(b^3)^3$

Step 3 $V = 15a^3b^6$

2 mistakes:

5^3 is 125, not 15

$(b^3)^3$ is b^9, not b^6

Scores

1

$200 — NO CALC

In the final game of a baseball tournament, about 5×10^4 fans attended the game and about 1×10^7 fans watched the game on television.

A. How many times more fans watched on TV than in person?

B. How many more fans watched on TV than in person?

$200

A. 200 times more fans

B. 9,950,000 more fans

Scores

$300 — NO CALC

Match each expression on the left with an expression on the right. The expressions on the right can be used more than once.

1) $\dfrac{3^{-7}}{3^{-9}}$

2) $\dfrac{9}{9^0}$

3) $(9^3)(9^{-4})$

4) $\dfrac{3^3}{3^4}$

A. $\dfrac{1}{9}$

B. $\dfrac{1}{3}$

C. 3

D. 9

$300

1) D
2) D
3) A
4) B

Scores

$400 — NO CALC

Which expressions are equivalent to $\dfrac{3^2}{3^{-5}}$?

A. $\dfrac{3 \cdot 3}{3 \cdot 3 \cdot 3 \cdot 3 \cdot 3}$

B. 3^{2-5}

C. 3^{2+5}

D. $\dfrac{3^4}{3^{-3}}$

E. 3^7

F. $\dfrac{1}{3^3}$

G. $3^2 \cdot 3^5$

$400

C, D, E, G

Scores

2

$500

Choose all of the expressions that are equivalent to 16x⁸.

A. $2x^5 \cdot 8x^3$ **B.** $\frac{20x^{10}}{4x^2}$ **C.** $\frac{32x^9}{2x}$

D. $(4x^4)^2$ **E.** $(8x^4)^2$ **F.** $4x^4 \cdot 4x^2$

G. $\frac{16x^3}{x^{11}}$ **H.** $(16x^8)^1$ **I.** $(16x^8)^0$

$500

A, C, D, H

Scores

$100   **NO CALC**

Select **all** equations that are correct.

- A $\sqrt[3]{8} = 2$
- B $\sqrt{125} = 5$
- C $\sqrt[3]{99} = 33$
- D $\sqrt{169} = 13$
- E $\sqrt[3]{27} = 3$

$100

A, D, E

Scores

$200

Choose ALL equations/tables that are linear.

A. $y = \frac{1}{2}x^2 + 8$

B. $y = 4(2 + x) + 2x$

C. $y = x(2x + 1)$

D.

x	y
0	3
2	6
4	12
6	24
8	48

E.

x	y
1	7
2	10
3	13
4	16
6	22

$200

B and E

Scores

3

$300

How many solutions do each of these equations have?

A. $x^2 = 100$

B. $x^3 = 27$

C. $x^3 = -27$

D. $x^2 = 26$

E. $x^2 = -16$

F. $x^3 = -\frac{8}{27}$

$300

A. Two

B. One

C. One

D. Two

E. Zero

F. One

Scores

$400

Which of these are irrational? Select ALL that apply.

A. 4.2587

B. $\sqrt{81}$

C. $\frac{18}{79}$

D. $\sqrt[3]{12}$

E. 1.232323…

F. $\sqrt{50}$

G. $\sqrt[3]{8}$

H. $\frac{\pi}{\pi}$

$400

D and F

Scores

$500

Classify each as:

A. Defined and Rational

B. Defined and Irrational

C. Undefined

1) $\sqrt{-49}$

2) $\sqrt{7}$

3) $\sqrt[4]{-16}$

4) $\sqrt[3]{18}$

5) $\sqrt[3]{-8}$

$500

1) C

2) B

3) C

4) B

5) A

Scores

$100

Solve the system of equations by graphing:
$$\begin{cases} y = -x - 6 \\ y = 3x + 2 \end{cases}$$

$100

(-2, -4)
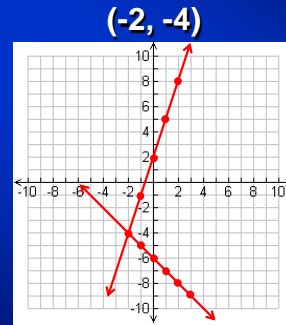
Scores

$200

John and Paul each had a big math assignment to do. The number of problems John had left is represented by the equation y = -4x + 50, where x represents the number of minutes he has been working. The number of problems Paul has left is given in the table. Who was working faster?

# of minutes	0	2	5	7	11
# problems left	60	54	45	39	27

$200

John (he was doing 4 problems per minute; Paul was only doing 3 problems per minute)

Scores

$300

For $1200, a business can post an advertisement for 30 days. For $1500, the advertisement will be posted for 60 days. The relationship comparing cost to days is linear. Which function can be used to model the relationship between cost, y, and the number of days, x, that an advertisement will be posted?

A. $y = 300x + 1200$

B. $y = 1200x + 300$

C. $y = 10x + 900$

D. $y = 900x + 10$

$300

C: y = 10x + 900

Scores

$400

The points (3, 10), (5, 14), and (8, 20) satisfy a linear function. Which point satisfies the SAME linear function?

A. (1, 2)

B. (10, 22)

C. (12, 28)

D. (16, 40)

$400

C (12, 28)

Scores

$500

Tree A was 25 feet tall 5 years after it was planted. It was 29 feet tall 6 years after it was planted. Tree B was 32 feet tall 5 years after it was planted, and 38 feet tall 6 years after it was planted. Assume each tree grows at a constant rate. Which tree was <u>taller</u> when it was planted, and how much taller was it?

$500

Tree A was 3 feet taller

(5 ft. vs. 2 ft.)

Scores

$100

Which of these three graphs show(s) the plot of a function with input *x* and output *y*?
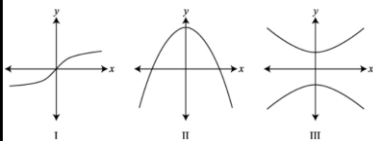
Ⓐ I only

Ⓑ II only

Ⓒ I and II only

Ⓓ I, II, and III

$100

C: I and II only

Scores

$200

Air temperature affects the speed of sound. The relationship between the temperature of air, T (in degrees celsius) and the speed of sound, S, is given by the function $S = 331.5 + 0.61T$. At what air temperature is the speed of sound 343.7 meters per second?

$200

20° C

Scores

$300

David is getting ready to go to school.
- He rides his bike from his house to the school at a constant rate.
- When he gets to school, he chains his bike to a bike rack and goes to class.
- After class, David realizes he forgot his lunch at home and rides his bike back towards his house at a constant rate.
- Before arriving home, he decides to use the $5 he has to buy lunch at school. He stops, turns around immediately and rides his bike back to school at a constant rate.
- When he gets to the school, he chains his bike to the bike rack.

Graph the motion of David's bike over time in this scenario.
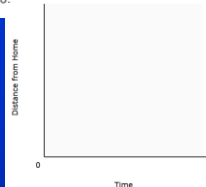
$300
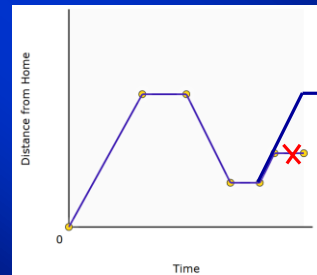
Scores

$400

Mike and Tim each opened bank accounts on the same day.
- Mike opened a bank account with $80.
- Mike deposits $20 each week.
- Tim opened a bank account with $500.
- Tim withdraws $50 each week.

After how many weeks will Mike and Tim have the same amount of money in their accounts? How much money will they each have?

$400

6 weeks, $200

Scores

7

$500

Which story matches the graph?

A. Tom took his dog for a walk to the park. He set off slowly and then increased his pace. At the park Tom turned around and walked slowly back home.

B. Tom rode his bike east from his home up a steep hill. After a while the slope eased off. At the top he raced down the other side.

C. Tom went for a jog. At the end of his road he bumped into a friend and his pace slowed. When Tom left his friend he walked quickly back home.

Distance from home

Time
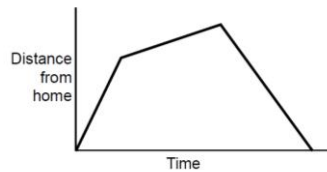
$500

C

Scores

$100

Mr. Zane wrote two equations on the board:

$K\ 3(x - 12) - 3x = 12$
$L\ 3(x - 4) + 24 - 3x = 12$

Which statement is true about the two equations?

Ⓐ Equation K has one solution and equation L has no solution.

Ⓑ Equation L has one solution and equation K has no solution.

Ⓒ Equation K has no solution and equation L has infinite solutions.

Ⓓ Equation L has no solution and equation K has infinite solutions.

$100

C

Scores

$200

Put a number in each blank so that the equation would have no solution.

$-2(-3x + 4) - 4x = \underline{\quad}x - \underline{\quad}$

$200

1st blank: 2

2nd blank: anything besides 8

Scores

$300

Solve the equation:

4x – 9 – 7x – 18 = -3(-x + 1)

$300

x = -4

Scores

$400

Solve the system:
$$\begin{cases} y = 5x - 9 \\ 4x - 2y = 0 \end{cases}$$

$400

x = 3

y = 6

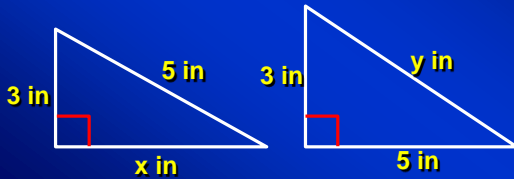Scores

$500

Solve the system:
$$\begin{cases} x - 3y = 25 \\ 3x + 2y = 20 \end{cases}$$

$500

(10, -5)

Scores

$100

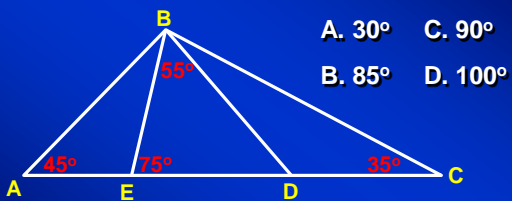**How much longer is y than x? Round to the nearest hundredth of an inch.**

5 in
3 in
3 in
3 in
y in
x in
5 in

$100

1.83 in

Scores

$200

Find the measure of $\angle ABD$.

B
55°
A 45°
E 75°
D
35° C

A. 30°   C. 90°
B. 85°   D. 100°

$200

B. 85°

Scores

$300

Which of these pairs of angles MUST be congruent?

1
2
5 8 9
6 10
7
3
4
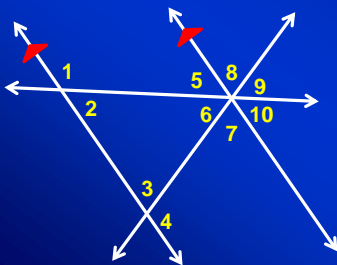
A. 2 and 3
B. 3 and 5
C. 1 and 4
D. 3 and 8

$300

D. 3 and 8

Scores

10

$400

Find the distance between the points (-2, 7) and (6, 2). Round to the nearest tenth of a unit.
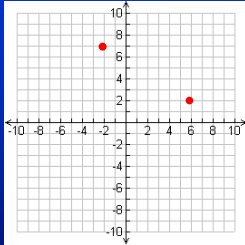
$400

9.4 units

Scores

$500

Find the area and perimeter of the rectangle. Round answers to the nearest tenth.

17 cm

8 cm
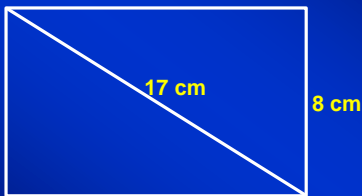
$500

Area = 120 cm^2

Perimeter = 46 cm

Scores

$100

Line segment AB, whose original length is 10 units, is translated up four units, rotated 90° clockwise, and then dilated by a scale factor of two. Which of the following is true?

A. The length of the image is 5 units

B. The length of the image is 10 units

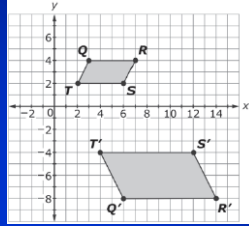C. The length of the image is 20 units

D. The length of the image is 28 units

$100

C

Scores

$200

What sequence of transformations maps QRST onto Q'R'S'T'?

A. Reflection over x-axis, then dilation by a scale factor of 2

B. 90º clockwise rotation, then dilation by a scale factor of 2

C. Dilation by a scale factor of 2, then translation 2 units right and 2 units down

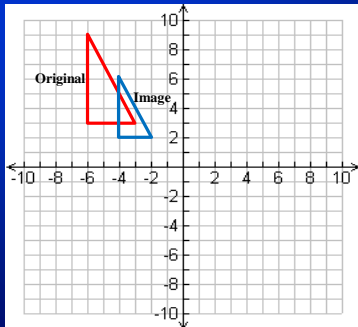D. 270º counterclockwise rotation, then a dilation by a scale factor of 2
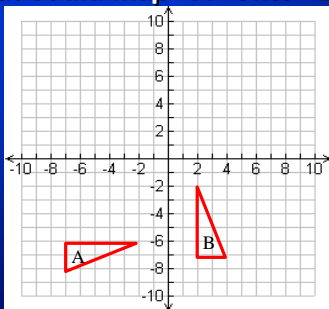
$200

A

Scores

$300

What is the scale factor of the dilation?

$300

2/3

Scores

$400

Name a sequence of transformations that could map "A" onto "B".

$400

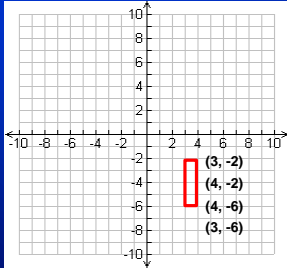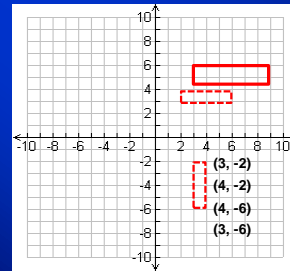**90º counterclockwise rotation (or 270º clockwise), then translation 4 units left**

OR

4 up, then 90º CCW rotation
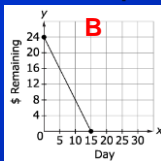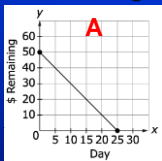
Scores

$500

Rotate 90° counterclockwise, then dilate by a scale factor of $\frac{3}{2}$.

(3, -2)
(4, -2)
(4, -6)
(3, -6)

$500

(3, -2)
(4, -2)
(4, -6)
(3, -6)

Scores

FINAL JEOPARDY

Rank from lowest rate of spending to highest rate of spending.

A

B

$y = -3x + 30$

C

x is # of days,
y is $ remaining

D

E

Day	0	5	10	15	20
$ Remaining	48	36	24	12	0

Day	0	2	4	6	8
$ Remaining	100	90	80	70	60

FINAL JEOPARDY

B, A, D, C, E

Scores