

Begin Practice Round





End Practice Round











30 seconds

A lemonade stand sells a 10 ounce drink for \$1. If the price is directly proportional to the amount of drink served, what is the price of a 16 ounce drink?



- A. \$1.25B. \$1.50C. \$1.60D. \$1.75
- D. \$1.75

A lemonade stand sells a 10 ounce drink for \$1. If the price is directly proportional to the amount of drink served, what is the price of a 16 ounce drink?



C. \$1.60

10 ounces for \$1.00 gives \$0.10/ounce So, 16 ounces will cost 16(\$0.10) or \$1.60.

45 seconds

Bill's heart rate, when sitting, beats at a rate of 50 beats per min. When he runs, his heart rate jumps to 160 beats per min. What is the percent of increase in Bill's heartbeat when he runs?

A. 200%
B. 210%
C. 215%
D. 220%



Bill's heart rate, when sitting, beats at a rate of 50 beats per min. When he runs, his heart rate jumps to 160 beats per min. What is the percent of increase in Bill's heartbeat when he runs?

D. 220% $\frac{160 - 50}{50} = \frac{x}{100}$ $\frac{110}{50} = \frac{x}{100}$ X = 220



60 seconds

Dave drove his car on the interstate at 70 mph the same number of hours that Doug drove his car at 55 mph. If Dave ended up driving 105 more miles than Doug, how many hours did they each drive?

A. 5B. 6C. 7D. 8



Dave drove his car on the interstate at 70 mph the same number of hours that Doug drove his car at 55 mph. If Dave ended up driving 105 more miles than Doug, how many hours did they each drive?



Use D = RT Let T = number of hours each drove Dave drove 70T and Doug drove 55T

Dave drove 105 more miles than Doug 70T = 105 + 55T 70T - 55T = 105 + 55T - 55T 15T = 105 (15T)/15 = 105/15T = 7





45 seconds

Darla took a 92 mile trip and used 6 gallons of gas. If the gas in her car is consumed at the same rate, choose the best estimate of the number of gallons her car would use on a 258 mile trip?

- A. 2.1
- B. 15.4
- C. 16.8
- D. 20



Darla took a 92 mile trip and used 6 gallons of gas. If the gas in her car is consumed at the same rate, choose the best estimate of the number of gallons her car would use on a 258 mile trip?

C. 16.8

92 miles = 258 miles 6 gallons x gallons

92x = 6(258)

92x = 1548

(92x)/92 = 1549/92 x ≈ 16.82608696... So x is about 16.8 gallons



2018 MATH Invitational Round 1 Number 8	60 seconds	
Stem and Leaf Plot TENS ONES	Use the stem and leaf plot to identify the mean, mode, and	
9 0 1 1 8 4 6 9 7 8 9 7 8 means 78	range respectively. A. 12, 86, 91 B. 88, 89, 0 C. 88, 9, 12 D. 86, 91,13	



End Round One







30 seconds

Which expression is not the same as the other three?

A.
$$4x + 3$$

B. $7x - 3x + 2(1 + 1)$
C. $(8x + 6)/2$
D. $4(x + 1) - 1$

Which expression is not the same as the other three?

B. 7x - 3x + 2(1 + 1)

The distributive property tells us (8x + 6)/2 and 4(x + 1) - 1 both simplify to 4x + 3.

7x - 3x + 2(1 + 1) simplifies to 4x + 4

30 seconds

Taylor has 12 packages of sports trading cards. Each package has a dozen cards. If Taylor gives half of the cards to Kate, how many cards will each person have?

A. 36B. 72C. 144D. 163



Taylor has 12 packages of sports trading cards. Each package has a dozen cards. If Taylor gives half of the cards to Kate, how many cards will each person have?



Half of 12 packs is 6 packs. A dozen is 12. 12(6) = 72 cards.







2018 MATH Invitational Round 2 Number 5			30 seconds					
Which equation represents a function for the Input-Output table?								
Input x	1	3	6	9	12			
Output y	2	-2	-8	-14	-20			
A. $y = -2(x + 2)$ B. $y = -2x + 4$ C. $y = -2x + (-4)$ D. $y = -2x - 4$								

2018 MATH Invitational Round 2 Number 5 Which equation represents a function for the Input-Output table?									
Input x	1	3	6	9	12				
Output y	2	-2	-8	-14	-20				
B. y =	-2x + 4	Check $x = 1$, $y = 2$ in each equation. $2 = -2(1+2)$ $2 \neq -6$ X 2 = -2(1) + 4 $2 = 2$ V $2 = -2(1) + (-)4$ $2 \parallel 6$ X $2 = -2(1) - 4$ $2 \neq -6$ X To confirm, check the other (x,y) values in $y = -2x + 4$.							

45 seconds

Lynn's horse weighs 74 pounds more than 5 times Lynn's weight. Lynn and her horse weigh a total of 710 pounds. How much does the horse weigh, in pounds?

> A. 579 B. 604 C. 635 D. 869



Lynn's horse weighs 74 pounds more than 5 times Lynn's weight. Lynn and her horse weigh a total of 710 pounds. How much does the horse weigh, in pounds?

> Let x = Lynn's weight 74 + 5x = horse's weight

B. 604

x + 74 + 5x = 710 6x + 74 = 710 6x + 74 -74 = 710 - 74 6x = 636 (6x)/6 = 636/6 x = 106

710 - 106 = 604


60 seconds

Levi wants to visit his aunt for her birthday. She lives 673.75 miles away. He drives an average speed of 55 mph. If he wants to arrive at 7:00 p.m., what time should he start his trip?

A. 6:30 a.m.
B. 6:35 a.m.
C. 6:40 a.m.
D. 6:45 a.m.



Levi wants to visit his aunt for her birthday. She lives 673.75 miles away. He drives an average speed of 55 mph. If he wants to arrive at 7:00 p.m., what time should he start his trip?

D. 6:45 a.m.

D = RT 673.75 = 55T $673.75 \div 55 = 55T \div 55$ T = 12.25 hours Or 12 hours 15 minutes 12 hours before 7:00 p.m. is 7:00 a.m. So Levi needs to start 15 minutes before 7

60 seconds

A scientist noticed a virus population tripled every 10 minutes. If a petri dish is completely full after 7 hours, how long did it take the dish to be 1/3 full?

- A. 5 hours 40 min
- B. 5 hours 50 min
- C. 6 hours 40 min
- D. 6 hours 50 min



A scientist noticed a virus population **tripled** every 10 minutes. If a petri dish is completely full after 7 hours, how long did it take the dish to be **1/3** full?

D. 6 hours 50 min



If the dish is 1/3 full, and triples in next 10 minutes, then it will be full. Since it is full at 7 hours, it must have been 1/3 full 10 minutes earlier or at 6 hours 50 minutes.







Which is NOT an example of the commutative property for real numbers?

C. $7 \div 3 = 7/3$

Addition and multiplication are commutative. Changing the order does not change the result. Division is NOT commutative. 2018 MATH Invitational Round 3 Number 230 secondsTravis sold 30 more than 4 times 6
raffle tickets. How many raffle tickets
did he sell?A. 50
B. 24
C. 120
D. 54

Travis sold 30 more than 4 times 6 raffle tickets. How many raffle tickets did he sell?

CKET

D. 54

30 + 4(6) 30 + 24 54

2018 MATH Invitational Round 3 Number 3			45 seconds	
Which answer choice does NOT contain equivalent values?				
	DECIMAL	FRACTION	PERCENT	
A	0.8	4/5	80%	
В	0.38	19/50	38%	
С	0.12	3/25	12%	
D	0.56	14/26	56%	







2018 MATH Invitational Round 3 Number 5	30 seconds
If you take 5 away from 4 times a would get 235. What is the numbe	number, you r?
A. 30	
B. 40	
C. 50	
D. 60	



45 seconds

The ratio of boys to girls in the 5th grade is 8:9. If there are 187 students in the 5th grade, how many boys are there?

A. 85B. 88C. 95D. 99



The ratio of boys to girls in the 5th grade is 8:9. If there are 187 students in the 5th grade, how many boys are there?

B. 88

Boys = 8xGirls 9x8x + 9x = 187

17x = 187 (17x)/17 = 187/17 x = 11 8x = 88 boys



60 seconds

Jorge bought a new computer. It was priced at 45% off the regular price. Including 8% sales tax, he paid \$772.20. What was the original price of the computer before the sale and without tax?

- A. \$1119.67B. \$1181.47
- C. \$1200.00
- D. \$1300.00



Jorge bought a new computer. It was priced at 45% off the regular price. Including 8% sales tax, he paid \$772.20. What was the original price of the computer before the sale and without tax?

D. \$1300.00



Let x = regular price of the computer With a 45% discount, Jorge paid 55% of the price. Then 8% sales tax was added. 0.55x = sale price 0.08(0.55x) = sales tax

0.55x + 0.08(0.55)	5x) = 772.20
0.55x + 0.044x	= 772.20
0.594x	= 772.20
(0.594x)/0.594	= 772.20/0.594
	x = 1300

2018 MATH Invitational Round 3 Number 860 secondsTony has 6 more dimes than quarters. He also
has 4 fewer nickels than quarters. If the value of
his coins is \$3.20, how many nickels does he
have?A. 6
B. 5
C. 4
D. 3A. 6
E. 5

Tony has 6 more dimes than quarters. He also has 4 fewer nickels than quarters. If the value of his coins is \$3.20, how many nickels does he have?

	Nickels	Value	Quarters	Value	Dimes	Value	Total
D. 3	Q-4	5	Q	25	6+Q	10	320
	6	30	10	250	16	160	440
	5	25	9	225	15	150	400
	4	20	8	200	14	140	360
	3	15	7	175	13	130	320

Or Let Q = number of quarters Solve 5(Q-4) + 25Q+ 10(6+Q)= 320To get Q = 7 and thus there are 3 nickels.





2018 MATH Invitational Round 4 Number 1	30 seconds
Solve x + -17 = 8	
A. 25 B. 9 C8 D. No solution	





During the season, Snoopy hit 13 fewer home runs than twice the number hit by Linus. If Linus hit 21 home runs, how many home runs did Snoopy hit?

A. 29



Linus hit 21 homeruns. Snoopy hit 13 less than twice that number.

Snoopy hit 2(21) - 13 = 29 homeruns



Round the sum of 2345.62 and 7893.2 to the nearest ten.

A. 10,240



Complete sum is 10,238.82. The 3 is in the ten's place. The digit after the 3 is 8, which tells us to round the 3 up.





60 seconds

Car Company A charges \$39.95 per day for its rental cars, with an additional charge of 12¢ per mile. Company B charges \$79.95 per day, with no mileage fee. How many miles of daily driving would make Company B the better deal?

- A. Less than 333
- B. Exactly 333 1/3
- C. Over 333 1/3
- D. Over 334



Car Company A charges \$39.95 per day for its rental cars, with an additional charge of 12¢ per mile. Company B charges \$79.95 per day, with no mileage fee. How many miles of daily driving would make Company B the better deal?

C. Over 333 1/3

Let m = number of miles to be driven. Company A cost more than Company B cost 39.95 + 0.12m > 79.95 -39.95 0.12m > 40 m > 40/0.12m > 333.3333



2018 MATH Invitational Round 4 Number 6 45 seconds
Tom bought a 1/2 case of soft drinks and gave 1/6 of what he had to Bill. Sue bought a 1/3 case of soft drinks and gave 1/4 of what she had to Amy. Who had the most soft drinks, Bill or Amy?
A. Neither, they both had the same amount
B. Bill had the most
C. Amy had the most
D. Can't tell, not enough information

2018 MATH Invitational Round 4 Number 6
Tom bought a 1/2 case of soft drinks and gave 1/6 of what he had to Bill. Sue bought a 1/3 case of soft drinks and gave 1/4 of what she had to Amy. Who had the most soft drinks, Bill or Amy?
A. Neither, they both had the same amount
Tom bought 1/2 case. He gave Bill 1/6(1/2) = 1/12 of a case. She gave Amy 1/4(1/3) = 1/12 of a case.
So without knowing how many is in a case, both Bill and Amy have 1/12 of a case.
45 seconds

An appliance store had a sale on refrigerators and washing machines. Refrigerators were on sale for \$800 each and washing machines sold for \$300 each. If the amount of money collected was \$45,900, which of these could have been the number of refrigerators sold?

- A. 51
- B. 50
- C. 49
- D. Not enough information



An appliance store had a sale on refrigerators and washing machines. Refrigerators were on sale for \$800 each and washing machines sold for \$300 each. If the amount of money collected was \$45,900, which of these could have been the number of refrigerators sold?



45,900 - 800(51) = 5100 45,900 - 800(50) = 5900 45,900 - 800(49) = 6700 45,900 - 800(47) = 8300

Only 5100 is divisible by 300.



30 seconds

A group of friends want to go to the state fair. If they collect \$5 from everyone, they will need \$5 more to pay entrance and parking. If they collect \$7 each, there will be \$3 more than they need. How many friends were there and what is the cost for all to attend?

- A. 2 friends, \$20
- B. 3 friends, \$21
- C. 4 friends, \$25
- D. 5 friends, \$20



A group of friends want to go to the state fair. If they collect \$5 from everyone, they will need \$5 more to pay entrance and parking. If they collect \$7 each, there will be \$3 more than they need. How many friends were there and what is the cost for all to attend?

C. 4 friends, \$25



Let x = number of friends going 5x + 5 = 7x - 3 -5x - 5x - 3 5 = 2x - 3 +3 = + 3 8 = 2xx = 4 friends 4(\$5) + \$5 = \$25

End Round Four

Begin Round Alternate

30 seconds

Tom went into work. Shortly after he got there, he got sick and had to go home. He worked only 18 minutes. How many hours did Tom work that day?

A. 0.2B. 0.3C. 0.4D. 0.5



Tom went into work. Shortly after he got there, he got sick and had to go home. He worked only 18 minutes. How many hours did Tom work that day?

B. 0.3

Know 1 hour = 60 minutes 18/60 = 0.3 hour



30 seconds

Taylor is taking a test with 138 questions. How many questions must she answer correctly if she wants a grade of at least 82%? Scores will be rounded to the nearest whole percent.

A. 112B. 113C. 114D. 115



Taylor is taking a test with 138 questions. How many questions must she answer correctly if she wants a grade of at least 82%? Scores will be rounded to the nearest whole percent.

B. 113

0.82(138) = 113.16 This score will be rounded down to 113.



30 seconds

Which algebraic expression represents the following statement?

If Allen feeds his cat the same amount of food (c) twice a day, how much food will he feed the cat in a week?



Which algebraic expression represents the following statement? If Allen feeds his cat the same amount of food

(c) twice a day, how much food will he feed the cat in a week?

B. (2 x c) x 7

Two times c is amount fed per day. There are seven days per week. Another way to write this might be (2c)7 or 2(7c) or simplified as 14c



30 seconds

Bob is selling candles at a one-day craft fair. He determined his profit equation is 1.75n - 162.75 = profit, where n = the number of candles sold. How many candles must Bob sell to break even at the craft fair?

- A. 87 B. 90
- C. 93
- D. 95



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2018 MATH Invitational Alternate Round Number 4
 Bob is selling candles at a one-day craft fair. He
 determined his profit equation is
 1.75n - 162.75 = profit, where n = the number of
 candles sold. How many candles must Bob sell
to break even at the craft fair?
                 At the break even point, profit is zero.
                 1.75n - 162.75 = 0
                 1.75n - 162.75 + 162.75 = 0 + 162.75
                 1.75n = 162.75
                 (1.75n)/1.75 = 162.75/1.75
    C. 93
                 n = 93
                 Or each answer could be checked and study the results.
                 1.75(87) - 162.75 = -10.5 loss of $10.50
                 1.75(90) - 162.75 = -5.25 loss of $5.25
                 1.75(93) - 162.75 = 0
                                      Bob broke even
                 1.75(95) - 162.75 = 3.5
                                      profit of $3.50
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60 seconds

Farmer Brown is increasing the length and the width of his rectangular-shaped garden by 3 yards each way. If the current size is 10 feet by 15 feet, give the new perimeter in feet.

A. 62B. 86C. 234D. 458



Farmer Brown is increasing the length and the width of his rectangular-shaped garden by 3 yards each way. If the current size is 10 feet by 15 feet, give the new perimeter in feet.



3 yards = 9 feet

New length is thus 15 + 9 = 24 feet New width is 10 + 9 = 19 feet

New perimeter is 24 + 19 + 24 + 19 = 86 feet



45 seconds

Axel is going downstairs when his cell phone rings. He turns and climbs up 3 steps to his room. The phone stopped ringing, so he turns around and climbs down 5 steps to the bottom step (not the landing). His cell phone rings again, so he climbs up six steps to his room. How many steps are in the staircase?



Α.	3
Β.	4
C.	5
D.	7

Axel is going downstairs when his cell phone rings. He turns and climbs up 3 steps toward his room. The phone stopped ringing, so he turns around and goes down 5 steps to the bottom step (not the landing). His cell phone rings again, so he climbs up six steps to his room. How many steps are in the staircase?

D. 7

When he goes back up the last time, he goes up 6 steps, from the bottom step. So there are a total of 7 steps.



End Round Alternate

Coaches, if this is the end of the contest, please be sure to collect team calculators from the competition table.