



THE SCIENCE ACADEMY STEM MAGNET
SUMMER HOMEWORK

ACCL 6/7 MATH

SKILLS & CONCEPTS YOU NEED

SIMPLIFY EACH EXPRESSION:

1. $5 \cdot 2 + 5 \cdot 3$

2. $7(6 - 2)$

3. $10 \cdot 3 - 5 \cdot 3$

4. $-(34 + 76)$

5. $4(6) + 4(3)$

6. $-4(12 - 16)$

7. $7(8) - 10(8)$

8. $11 \cdot 9 - 6 \cdot 9$

9. $-2 \cdot 3 - 2 \cdot 7$

10. $6 \cdot (-9) - 3(-9)$

11. $4(12) + 4(6)$

12. $12(-14 + 8)$

13. $(24 - 15)(-2)$

14. $-5(-3) - (-5)(2)$

15. $(72 - 81)(5)$

COMPLETE THE RELATED EQUATIONS:

16. $() + 5 = 8$

$8 - () = 5$

23. $3 \cdot () = 75$

$75 \div () = 3$

17. $20 - () = 9$

$9 + () = 20$

24. $72 \div () = 12$

$12 \cdot () = 72$

18. $-2 + () = 3$

$3 - () = -2$

25. $100 \div 20 = ()$

$20 \cdot () = 100$

19. $90 - () = 55$

$55 + () = 90$

26. $2 \cdot () = -14$

$-14 \div () = 2$

20. $20 - () = 23$

$23 + () = 20$

27. $-36 \div () = -6$

$-6 \cdot () = -36$

21. $() + 12 = -7$

$-7 - () = 12$

28. $() \cdot (-10) = -70$

$-70 \cdot () = -10$

22. $5 \cdot () = 30$

$30 \div () = 5$

29. $52 \div () = 4$

$4 \cdot () = 52$

COMPARE. USE $>$, $<$, OR $=$ TO COMPLETE EACH STATEMENT:

30. 6 16

31. 5 -5

32. 36 15

33. -52 -21

34. 0 -8

35. -7 3

36. $12 + 3$ $19 - 4$

37. $5(4)$ 7

38. $18 - 27$ $-34 + 12$

39. $27 \div 9$ $6 \cdot 2$

40. $-2 \cdot 6$ $4 \cdot (-3)$

41. $-8 \div 2$ $9 \div 3$

42. $8(-5)$ $100 - 65$

43. $3(-2)(-4)$ $4(-3)(2)$

44. $6 \div (10 - 8)$ $1 + 5$

SKILLS & CONCEPTS YOU NEED

ROUND EACH NUMBER TO THE NEAREST TEN:

- | | | |
|-------|--------|-----------|
| 1. 37 | 5. 49 | 9. 834 |
| 2. 12 | 6. 105 | 10. 6,009 |
| 3. 9 | 7. 207 | 11. 3 |
| 4. 2 | 8. 602 | 12. 45 |

COMPARE. USE $>$, $<$, OR $=$ TO COMPLETE EACH STATEMENT:

- | | | | | | |
|-----------|--------|------------|-------|-------------|---------|
| 13. 10.5 | 1.05 | 17. 7.641 | 7.593 | 21. -27.619 | -27.7 |
| 14. 8.792 | 8.972 | 18. 6.3 | 6.38 | 22. 14.0352 | 14.3052 |
| 15. 12.74 | 12.751 | 19. 5.001 | 5.02 | 23. 1.956 | 2.989 |
| 16. 0.96 | 1.32 | 20. -9.871 | -10.3 | 24. -24 | -23.68 |

ORDER EACH GROUP OF DECIMALS FROM LEAST TO GREATEST:

- | | |
|------------------------------|--------------------------------|
| 25. 3.25, 4.19, 3.8, 4.91 | 28. 0.02, 0.017, 0.0201, 0.201 |
| 26. 8.35, 8.349, 8.351, 9.25 | 29. -1.4, -1.04, -1.401, -14.1 |
| 27. 12.09, 12.01, 12.9, 12.1 | 30. -2.3, -3.2, -3.19, -2.8 |

SIMPLIFY:

- | | | |
|-------------------|------------------------|-------------------------|
| 31. $3.4 + 8.09$ | 37. $10.579 + 4.638$ | 42. $16.25 \div 2.5$ |
| 32. $9.32 - 7.65$ | 38. $2.19 - 0.984$ | 43. $(6.1)(8.7)$ |
| 33. $5.6 + 9.3$ | 39. $3.4 \cdot 2.1$ | 44. $40.02 \div 5.8$ |
| 34. $8 - 4.93$ | 40. $\frac{14.4}{1.2}$ | 45. $10.4 \cdot 5.3$ |
| 35. $0.59 - 3.06$ | 41. $(1.001)(6.7)$ | 46. $\frac{77.38}{7.3}$ |
| 36. $5.8 - 4.92$ | | |

SIMPLIFY:

- | | | |
|---------------------------|-------------------------|-----------------------|
| 47. $9.87 \cdot 10$ | 51. $0.8 \div 10$ | 55. $0.087 \cdot 10$ |
| 48. $5.32 \cdot 100$ | 52. $8.42 \div 100$ | 56. $157.4 \cdot 100$ |
| 49. $0.3 \cdot 1,000$ | 53. $16.1 \div 1,000$ | 57. $1,430 \div 10$ |
| 50. $15.407 \cdot 10,000$ | 54. $12.09 \div 10,000$ | 58. $1.89 \div 10$ |

SKILLS & CONCEPTS YOU NEED

FIND EACH QUOTIENT:

1. $720 \div 8$

2. $7200 \div 8$

3. $6\sqrt{132}$

4. $3\sqrt{147}$

5. $\frac{189}{9}$

6. $\frac{450}{10}$

7. $424 \div 2$

8. $5\sqrt{135}$

9. $10\sqrt{1300}$

10. $700 \div 5$

11. $\frac{273}{3}$

12. $92 \div 4$

FIND EACH PRODUCT:

13. $12 \cdot 12 \cdot 12$

14. $8 \cdot 8 \cdot 8$

15. $9 \cdot 9 \cdot 9 \cdot 9$

16. $5 \cdot 5 \cdot 5 \cdot 5 \cdot 5 \cdot 5$

17. $(-4)(-4)(-4)$

18. $(-2)(-2)(-2)(-2)(-2)(-2)$

WRITE TWO NUMBERS THAT, WHEN MULTIPLIED, RESULT IN EACH PRODUCT:

19. 12

20. 45

21. 18

22. 63

23. 24

24. 50

25. 32

26. 81

27. 54

28. 60

29. 28

30. 56

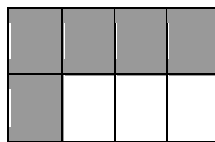
31. 44

32. 36

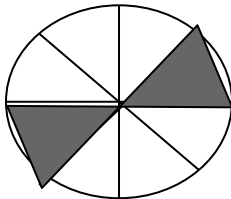
33. 72

WRITE TWO FRACTIONS TO DESCRIBE EACH MODEL:

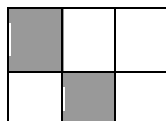
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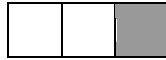


35.



36.





SKILLS & CONCEPTS YOU NEED

WRITE TWO EQUIVALENT FRACTIONS TO DESCRIBE EACH MODEL:

1.



2.



3.



4.



WRITE EACH FRACTION IN SIMPLEST FORM:

5. $\frac{10}{12}$

9. $-\frac{120}{125}$

13. $-\frac{18}{81}$

6. $\frac{8}{20}$

10. $\frac{15}{45}$

14. $-\frac{10}{65}$

7. $-\frac{32}{16}$

11. $\frac{-20}{-75}$

15. $\frac{14}{84}$

8. $\frac{25}{200}$

12. $\frac{16}{124}$

16. $\frac{55}{77}$

DIVIDE. WRITE EACH QUOTIENT AS A DECIMAL:

17. $27 \div 5$

19. $10 \div 16$

21. $15 \div 40$

18. $6 \div 10$

20. $9 \div 12$

SOLVE EACH EQUATION:

22. $X + 1.8 = 3$

26. $-19 = p + 21$

30. $-0.89 = \frac{\square}{2}$

23. $n - 41 = 19$

27. $6t = 9$

24. $27.2 = 3.5 + y$

28. $40 = z - 34$

25. $a \div (-3) = 15$

29. $8d = 64$

FIND THE GCF OF EACH GROUP OF NUMBERS:

31. 3, 15

32. 16, 20

33. 12, 36

34. 11, 30
35. 30, 500
36. 45, 80

37. 27, 72
38. 55, 121
39. 30, 40, 210

40. 14, 28, 84

Common Core Portion

Section 1

A local club is hosting a party at the school gym. Seeking to establish a connection with the community, the club will be providing a fun event and a meal for the children. The doors open at 6:00 P.M. and the games begin at 6:30 P.M.

Ages	Number of Children That Arrived at 6:00 P.M.	Number of Children That Arrived at 6:30 P.M.
6-10	18	6
11-14	12	4

Write your answers on another piece of paper. Show all of your work to receive full credit.

Part A

As the assistant to the party director, you are instructed to split the children into groups so there is an equal number of children in each group. Each group must also have the same number of children from each age range. At 6:00 P.M., what is the greatest number of groups that can be created? How many children of each age range are represented in each group?

Part B

Additional children arrive at 6:30 P.M. What is the greatest number of groups that can be created using the same guidelines in Part A?

Part C

The students begin to play games. Each game takes 10 minutes to complete. There are five game stations, so five games can be played at once. Based on your answer to Part B, how long will it take all the groups to play every game? Explain your answer.

Section 2

Juan is calculating how many calories he consumes in a day. He determines that a person his age should consume 68,820 Calories per month.

Write your answers on another piece of paper. Show all of your work to receive full credit.

Part A

Based on a 31-day month, how many Calories should Juan consume in a day?

Part B

Juan wants to eat fewer than 800 Calories at lunch. The table shows the menu at the school cafeteria with the Calorie totals listed for each item. Find two different meal options for Juan to choose for lunch. Then find the cost for each meal.

Food Item	Calories	Cost (\$)
Carrots	41	0.80
Chocolate Cake (slice)	513	2.10
Cookie	253	1.45
Corn Dog	212	1.50
French Fries	103	1.10
Green Beans	39	0.80
Hamburger	449	2.50
Pepperoni Pizza (slice)	334	1.75
Salisbury Steak	342	2.30

Part C

Juan has a budget of \$20.00 for lunch each week. Choose one of the meals from Part B for Juan's lunch on Monday. How much does he have left for the rest of the week? How much could he spend each remaining day, if he spends the same amount each day?

Part D

On game day, the entire basketball team eats together. There are 12 players on the team. Each player eats two slices of pizza, carrots, and a cookie. Find the total cost of the team's lunch.

Section 3

Aliya, Benito, Cassie, and Dylan participated in a free throw contest. Each participant had to shoot at least ten shots within a certain time period.

The participants filled out their individual performance. The results are shown in the table.

Name	Shots Made	Shots Attempted	Fraction	Decimal	Percent
Aliya	14	20			
Benito		36	$\frac{1}{2}$		
Cassie	18	25			72%
Dylan	9		$\frac{3}{5}$	0.6	

Write your answers on another piece of paper. Show all of your work to receive full credit.

Part A

The paper got wet after the participants filled in the table and some of the numbers cannot be read. Fill in the missing information. Express the fractions in simplest form. Who had the greatest percent of shots made?

Part B

Use a bar diagram to model the scores of each participant. Suppose Marco recorded his scores late and made 15 out of 27 shots. Draw a bar diagram to represent his score. Then order the players from least to greatest score.

Part C

The coach decided to extend the contest another day. Aliya is the only participant to shoot more free throws. How many free throws must she make in a row to have the highest percentage of the four participants? Explain how you know.

Section 4

The Johanssens are traveling across the country to visit relatives. Mr. Johanssen set the cruise control and drove at a constant speed for $622\frac{1}{2}$ miles. He took breaks, but remained at an average constant speed when driving. Some of the data related to the trip appear in the table below.

Time (h)	3	4	5	6	9	C
Distance (mi)	$186\frac{3}{4}$	a	$311\frac{1}{4}$	b	$560\frac{1}{4}$	$622\frac{1}{2}$

Write your answers on another piece of paper. Show all of your work to receive full credit.

Part A

What is Mr. Johanssen's rate of speed in miles per hour? Express your answer as a fraction or a mixed number.

Part B

Using the answer from Part A, find the missing values in the table. Express your answer as a fraction or a mixed number.

Part C

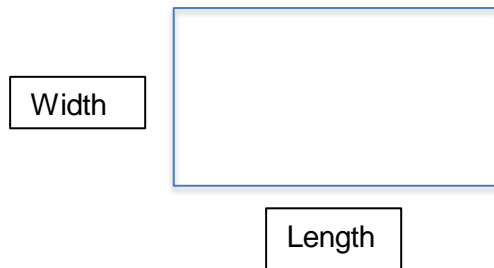
Graph the ordered pairs from the completed table on a coordinate plane. How far will the Johanssens have traveled after 15 hours?

Part D

The following year, Mr. Johanssen rents a vehicle for the same trip. The speedometer in this vehicle registers speeds in kilometers per hour instead of miles per hour. He wants to drive at a constant rate of 70 miles per hour. What is the maximum speed in kilometers per hour that he can drive to not exceed a rate of 70 miles per hour? Express your answer as a mixed number. Recall that 1 mile is approximately equal to $1\frac{3}{5}$ kilometers.

Section 5

A school is having tryouts for the cross country team. The school does not have a track, so the runners run around the school's football field. The cross country coach determines that the width of the field is seventy yards shorter than the length.



Write your answers on another piece of paper. Show all of your work to receive full credit.

Part A

Write an expression that represents the perimeter of the football field. Let x represent the length of the football field. Include parentheses in your expression. Next, write an equivalent expression that does not include parentheses. What property or properties did you use to simplify? Explain.

Part B

The cross-country coach later determines that the length of the football field is 120 yards. All students must run five laps. Using your answer from Part A, determine the actual number of yards that each athlete must run in the tryouts. In order to make the team, students must complete the laps in 6 minutes. How quickly must they run each lap?

Part C

Rita is the manager of the football team, and she has been assigned the task of painting a mascot in the middle of the field. The painting fits neatly in the shape of a square with one side of the painting equal to five yards. The area of a square is given by the formula $A = s^2$, where s is the length of a side. What is the area of the painting in square yards?

Section 6

Lesha and Maria spend the weekend studying for upcoming tests. They start with math, since that is their favorite subject. The table lists their scores for the first three math tests of the semester.

Student	Test #1	Test #2	Test #3
Lesha	75	100	100
Maria	92	x	88

Write your answers on another piece of paper. Show all of your work to receive full credit.

Part A

Maria cannot remember what she scored on the second test, but she knows that the sum of the three tests is 270. Write and solve an addition equation to determine what she scored on her second test.

Part B

An A grade will be given to students having at least 450 total test points. There are two more tests to take before the semester is over. Lesha wants to know what she needs to score on the next two tests to finish with an A. Write and solve an equation to determine what score she needs to average on the next two tests if each question is worth 1 point. Explain your reasoning.

Part C

Consider the equation $5x = 8$. Write a scenario pertaining to the girls' studying that is represented by this equation. Solve the equation and explain what the answer represents.

Section 7

Mr. Jacobs is installing a new kitchen floor using white and brown tiles. The relationship between the number of brown tiles and the number of white tiles is shown in the table.

White (w)	1	2	3	4	5	6
Brown (b)	4	6	8	10	?	?

Write your answers on another piece of paper. Show all of your work to receive full credit.

Part A

Fill in the missing values based on the pattern in the table. Write an equation that represents the relationship between the white tiles and the brown tiles. Let b represent brown tiles and w represent white tiles.

Part B

Each tile costs \$12. Determine the cost of 60 tiles, 80 tiles, 100 tiles, and 120 tiles. Write a set of ordered pairs (number of tiles, total cost) to represent the data. Then graph the ordered pairs.

Part C

Mr. Jacobs budgeted \$1,200 for tiles. His sketch of the floor requires him to use 38 white tiles. Each white tile costs \$12. Write and solve an inequality to find the maximum amount he can spend on brown tiles.