

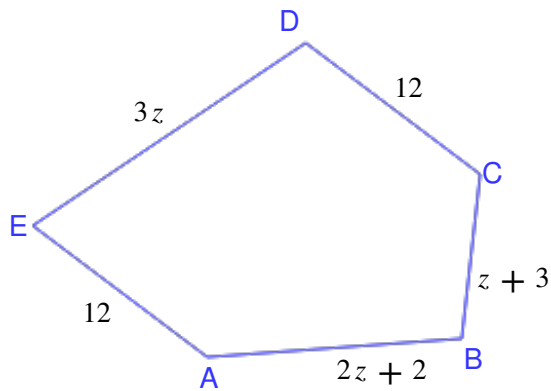
ALEKS® FT09: Summative Practice #1

Middle School Math Course 3 / 05Math8-Century Community Charter School 2016-17 - 05N3CS17 (Mr. Ford)

Student Name/ID:

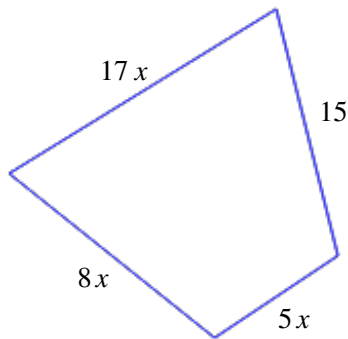
1. The perimeter of the pentagon below is 65 units. Find the length of side \overline{BC} .

Write your answer without variables.



2. Write two expressions for the perimeter of the figure.

Use all four side lengths in your first expression.
Simplify to get your second expression.



Note: The figure is not drawn to scale.

$$\text{perimeter} = \underline{\quad} + \underline{\quad} + \underline{\quad} + \underline{\quad}$$

$$\text{perimeter} = \underline{\hspace{2cm}}$$

3. Three friends went out to lunch. They each started with the same amount of money, and they each spent \$6. They ended with a combined total of \$24. How much money did each of them have to start?

(a) Write an equation that could be used to answer the question above. First, choose the appropriate form. Then, fill in the blanks with the numbers 3, 6, and 24. Let x represent the amount (in dollars) each person had to start.

$\underline{\quad}(x + \underline{\quad}) = \underline{\quad}$

$\underline{\quad}(x - \underline{\quad}) = \underline{\quad}$

(b) Solve the equation in part (a) to find the amount (in dollars) each person had to start.

$$x = \underline{\hspace{2cm}}$$

4. For each equation, choose the statement that describes its solution.
If applicable, give the solution.

$-3(w + 2) = 2(w + 6) + 7$
<input type="radio"/> No solution
<input type="radio"/> $w =$
<input type="radio"/> All real numbers are solutions
$-6(y + 1) + 8y = 2(y - 3)$
<input type="radio"/> No solution
<input type="radio"/> $y =$
<input type="radio"/> All real numbers are solutions

5. Solve for w .

$$9w + 25 = 5(w - 3)$$

Simplify your answer as much as possible.

6. Solve for x .

$$38 = 3(x + 2) + 5x$$

Simplify your answer as much as possible.

7. Ann will rent a car for the weekend. She can choose one of two plans. The first plan has an initial fee of \$53.96 and costs an additional \$0.12 per mile driven. The second plan has an initial fee of \$41.96 and costs an additional \$0.14 per mile driven. How many miles would Ann need to drive for the two plans to cost the same?

8. First, complete the story below so that it can be represented by the equation $4500 - 45x = 4200 - 35x$. Then, solve for x .

Pool A started with ____ liters of water, and ____ liters per minute ____ {(a) are being pumped in., (b) are being drained out.}

Pool B started with ____ liters of water, and ____ liters per minute ____ {(a) are being pumped in., (b) are being drained out.}

The amount of water after x minutes is ____ {(a) more in Pool A., (b) more in Pool B., (c) the same in the two pools.}

For this equation (and story): $x =$ ____

9. Solve for w .

$$2w + 5 = 4w + 13$$

Simplify your answer as much as possible.

10. Amanda, Reuben, and Goran sent a total of 125 text messages during the weekend. Reuben sent 4 times as many messages as Goran. Amanda sent 7 fewer messages than Goran. How many messages did they each send?

11. A local hamburger shop sold a combined total of 550 hamburgers and cheeseburgers on Friday. There were 50 more cheeseburgers sold than hamburgers. How many hamburgers were sold on Friday?

12. Lamar rented a truck for one day. There was a base fee of \$18.99, and there was an additional charge of 84 cents for each mile driven. Lamar had to pay \$260.07 when he returned the truck. For how many miles did he drive the truck?

13. Each equation below is followed by several stories.

Select *all* of the stories that can be represented by the equation.

If *none* of the stories can be represented, select "None of the above".

(a) $4x - 6 = 106$

Frank bought x copies of a book online for \$4 each copy. He also paid a shipping fee of \$6 for the entire purchase. He spent a total of \$106

including the shipping fee.

Frank bought x copies of a book online for \$4 each copy. He then received a discount of \$6 off the entire purchase. He spent a total of \$106 after the discount.

Frank bought 4 copies of a book for x dollars each copy. He also paid a shipping fee of \$6 for the entire purchase. He spent a total of \$106 including the shipping fee.

Frank bought 4 copies of a book for x dollars each copy. He then received a discount of \$6 off the entire purchase. He spent a total of \$106 after the discount.

None of the above

(b) $30x + 60 = 630$

A fitness center charges \$30 for each personal training hour. There is also an annual fee of \$60. Last year, Leila used x personal training hours. She paid a total of \$630 including the annual fee.

A fitness center charges x dollars for each personal training hour. There is also an annual fee of \$30. Last year, Leila used 60 personal training hours. She paid a total of \$630 including the annual fee.

A fitness center charges \$60 for each personal training hour. There is also an annual fee of \$30. Last year, Leila used x personal training hours. She paid a total of \$630 including the annual fee.

A fitness center charges x dollars for each personal training hour. There is also an annual fee of \$60. Last year, Leila used 30 personal training hours. She paid a total of \$630 including the annual fee.

None of the above

14. Solve for u .

$$\frac{u}{3} - 2.2 = -11.8$$

15. Scott is saving money to buy a game. So far he has saved \$12, which is one-fourth of the total cost of the game. How much does the game cost?

16. In a recent year, 31.4 % of all registered doctors were female. If there were 49,100 female registered doctors that year, what was the total number of registered doctors?

Round your answer to the nearest whole number.

17. If a person's eye level is h meters above sea level and he can see d kilometers to the horizon, then $d = 3.57 \sqrt{h}$. Suppose the person's eye level is 10.24 meters above sea level. How far can he see to the horizon?

Round your answer to the nearest tenth.

18. Classify each number below as a rational number or an irrational number.

	rational	irrational
8π	<input type="radio"/>	<input type="radio"/>
$-51.\overline{94}$	<input type="radio"/>	<input type="radio"/>
$\sqrt{17}$	<input type="radio"/>	<input type="radio"/>
$\frac{7}{12}$	<input type="radio"/>	<input type="radio"/>
$\sqrt{4}$	<input type="radio"/>	<input type="radio"/>

19. Check *all* statements that are true.

- Since it is a repeating decimal, $11.2\overline{6}$ is **irrational**.
- Since it is a terminating decimal, 14.51 is **rational**.
- Since 25 is a perfect square, $\sqrt{25}$ is **irrational**.
- Since 10 is *not* a perfect square, $\sqrt{10}$ is **rational**.
- Since it is a ratio of two integers, $\frac{5}{4}$ is **rational**.
- None of these are true.

20. For each number, determine if it can be written as a fraction. Then state the reason.

	Can this be written as a fraction?	Reason
$0.\overline{65}$	<input type="radio"/> Yes	<input type="radio"/> This is a terminating decimal.
	<input type="radio"/> No	<input type="radio"/> This is a repeating decimal.
		<input type="radio"/> This is neither a terminating nor repeating decimal.
0.16666 ...	<input type="radio"/> Yes	<input type="radio"/> This is a terminating decimal.
	<input type="radio"/> No	<input type="radio"/> This is a repeating decimal.
		<input type="radio"/> This is neither a terminating nor repeating decimal.
0.3162 ...	<input type="radio"/> Yes	<input type="radio"/> This is a terminating decimal.
	<input type="radio"/> No	<input type="radio"/> This is a repeating decimal.
		<input type="radio"/> This is neither a terminating nor repeating decimal.
0.816	<input type="radio"/> Yes	<input type="radio"/> This is a terminating decimal.
	<input type="radio"/> No	<input type="radio"/> This is a repeating decimal.
		<input type="radio"/> This is neither a terminating nor repeating decimal.

21. Classify each number below as an integer or not.

	Integer?	
	Yes	No
-32.28	<input type="radio"/>	<input type="radio"/>
961.93	<input type="radio"/>	<input type="radio"/>
$\frac{4}{13}$	<input type="radio"/>	<input type="radio"/>
$-\frac{8}{4}$	<input type="radio"/>	<input type="radio"/>
29	<input type="radio"/>	<input type="radio"/>

22. Order these numbers from least to greatest.

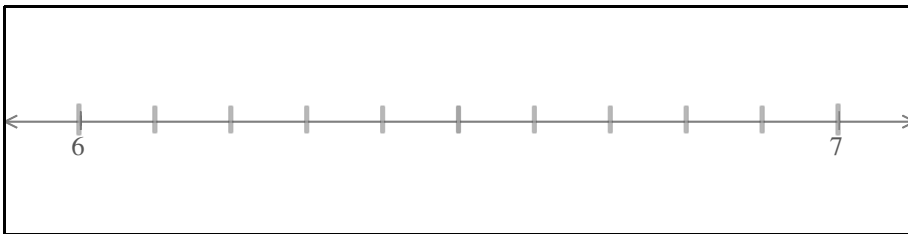
$$4.56, -\sqrt{19}, \frac{23}{5}, \sqrt{21}$$

23. Use a calculator to approximate $\sqrt{110}$.

Round your answer to the nearest hundredth.

24. Plot $\sqrt{40}$ on the decimal number line as accurately as possible.

Note that you can use the calculator to help find the answer.



25. Find two consecutive whole numbers that $\sqrt{14}$ lies between.

26. Find the side length of a cube with a volume of 913 yd^3 .

If necessary, round your answer to the nearest tenth.

_____ yd

27. Solve $x^3 = -8$, where x is a real number.
Simplify your answer as much as possible.

28. Answer the questions below. Write your answers in simplest form.

(a) A square has a perimeter of 32 ft. What is the length of each side?

_____ ft

(b) A square has an area of 121 yd². What is the length of each side?

_____ yd

29. Solve $w^2 = 36$, where w is a real number.

Simplify your answer as much as possible.

30. Suppose some computations were done on a calculator.

The result displayed was 3.77E43 for one computation.

The result displayed was 7.1E-29 for another computation.

Write these numbers in scientific notation.

3.77E43 = _____

7.1E-29 = _____

31. Calculate.

$$(8.657 \times 10^7) - (3.8 \times 10^5)$$

Write your answer in scientific notation.

32. Galaxy A has 9×10^{10} stars. Galaxy B has 2×10^6 stars. Choose which galaxy has more stars. Then fill in the blank with a number written in standard notation.

Galaxy A has more stars.

Galaxy A has _____ times as many stars as Galaxy B.

Galaxy B has more stars.

Galaxy B has _____ times as many stars as Galaxy A.

33. Calculate.

$$\frac{3.5 \times 10^{-2}}{5 \times 10^{-6}}$$

Write your answer in scientific notation.

34. Calculate.

$$(7 \times 10^{-6})(6.6 \times 10^9)$$

Write your answer in scientific notation.

35. First, fill in the blank below with the correct unit.
Then use scientific notation to represent the quantity in meters.

A nearby mountain has a height of 5.2 _____.
Writing in scientific notation, this is _____ meters.

36. Answer the following.

- (a) A certain solution has a hydrogen ion concentration of 5.89×10^{-5} moles per liter. Write this number in standard notation.
- (b) A black rhinoceros can weigh up to 6400 pounds. Write this number in scientific notation.

37. Simplify.

$$\frac{x}{x^{-1}}$$

Write your answer with a positive exponent only.

38. Simplify.

$$(2a^2b)^5$$

Write your answer without parentheses.

39. Simplify.

$$\frac{z^5 y^6}{z y^4}$$

40. Evaluate the expression when $x = 2$.

$$x^2 - 6x + 3$$

41. Write $0.\overline{6}$ as a fraction.

FT09: Summative Practice #1 Answers for class 05Math8-Century Community Charter School 2016-17 - 05N3CS17

1. $BC = 9$

2. perimeter = $17x + 15 + 5x + 8x$

perimeter = $30x + 15$

3. (a) Write an equation that could be used to answer the question above. First, choose the appropriate form. Then, fill in the blanks with the numbers 3, 6, and 24. Let x represent the amount (in dollars) each person had to start.

$\underline{\quad}(x + \underline{\quad}) = \underline{\quad}$

$3(x - 6) = 24$

(b) Solve the equation in part (a) to find the amount (in dollars) each person had to start.

$x = 14$

4.

$-3(w + 2) = 2(w + 6) + 7$
<input type="radio"/> No solution
<input checked="" type="radio"/> $w = -5$
<input type="radio"/> All real numbers are solutions
$-6(y + 1) + 8y = 2(y - 3)$
<input type="radio"/> No solution
<input type="radio"/> $y =$
<input checked="" type="radio"/> All real numbers are solutions

5. $w = -10$

6. $x = 4$

7. 600 miles

8.

Pool A started with 4500 liters of water, and 45 liters per minute are being drained out. Pool B started with 4200 liters of water, and 35 liters per minute are being drained out. The amount of water after x minutes is the same in the two pools.

For this equation (and story): $x = 30$

9. $w = -4$

10.

Number of text messages Amanda sent: 15

Number of text messages Reuben sent: 88

Number of text messages Goran sent: 22

11. 250 hamburgers

12. 287 miles

13. (a) $4x - 6 = 106$

Frank bought x copies of a book online for \$4 each copy. He also paid a shipping fee of \$6 for the entire purchase. He spent a total of \$106 including the shipping fee.

Frank bought x copies of a book online for \$4 each copy. He then received a discount of \$6 off the entire purchase. He spent a total of \$106 after the discount.

Frank bought 4 copies of a book for x dollars each copy. He also paid a shipping fee of \$6 for the entire purchase. He spent a total of \$106 including the shipping fee.

Frank bought 4 copies of a book for x dollars each copy. He then received a discount of \$6 off the entire purchase. He spent a total of \$106 after the discount.

None of the above

(b) $30x + 60 = 630$

A fitness center charges \$30 for each personal training hour. There is also an annual fee of \$60. Last year, Leila used x personal training hours. She paid a total of \$630 including the annual fee.

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None of the above

14. $u = -28.8$

15. \$48

16. 156,369 registered doctors

17. 11.4 kilometers

18.

	rational	irrational
8π	<input type="radio"/>	<input checked="" type="radio"/>
$-51.\overline{94}$	<input checked="" type="radio"/>	<input type="radio"/>
$\sqrt{17}$	<input type="radio"/>	<input checked="" type="radio"/>
$\frac{7}{12}$	<input checked="" type="radio"/>	<input type="radio"/>
$\sqrt{4}$	<input checked="" type="radio"/>	<input type="radio"/>

19.

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<input checked="" type="checkbox"/>	Since it is a terminating decimal, 14.51 is rational .
<input type="checkbox"/>	Since 25 is a perfect square, $\sqrt{25}$ is irrational .
<input type="checkbox"/>	Since 10 is <i>not</i> a perfect square, $\sqrt{10}$ is rational .
<input checked="" type="checkbox"/>	Since it is a ratio of two integers, $\frac{5}{4}$ is rational .
<input type="checkbox"/>	None of these are true.

20.

	Can this be written as a fraction?	Reason
$0.\overline{65}$	<input checked="" type="radio"/> Yes	<input type="radio"/> This is a terminating decimal.
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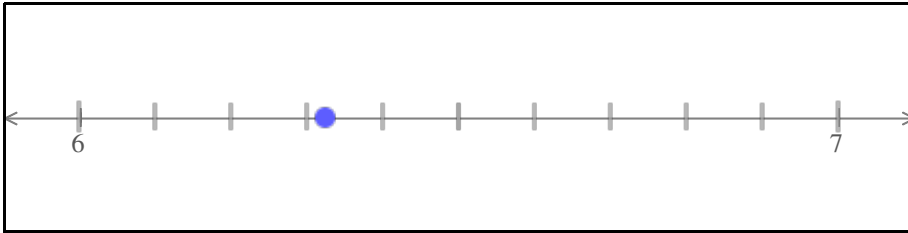
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$\frac{4}{13}$	<input type="radio"/>	<input checked="" type="radio"/>
$-\frac{8}{4}$	<input checked="" type="radio"/>	<input type="radio"/>
29	<input checked="" type="radio"/>	<input type="radio"/>

22. $-\sqrt{19} < 4.56 < \sqrt{21} < \frac{23}{5}$

23. $\sqrt{110} \approx 10.49$

24.



25. 3 and 4

26. 9.7 yd

27. $x = -2$

28. (a) A square has a perimeter of 32 ft. What is the length of each side?
8 ft

(b) A square has an area of 121 yd^2 . What is the length of each side?
11 yd

29. $w = 6, -6$

30.

$$3.77\text{E}43 = 3.77 \times 10^{43}$$

$$7.1\text{E}-29 = 7.1 \times 10^{-29}$$

31. 8.619×10^7

32.

Galaxy A has more stars.

Galaxy A has 45,000 times as many stars as Galaxy B.

Galaxy B has more stars.

Galaxy B has _____ times as many stars as Galaxy A.

33. 7×10^3

34. 4.62×10^4

35.

A nearby mountain has a height of 5.2 kilometers.

Writing in scientific notation, this is 5.2×10^3 meters.

36. (a) 0.0000589 moles per liter

(b) 6.4×10^3 pounds

37. x^2

38. $32a^{10}b^5$

39. z^4y^2

40. -5

41. $\frac{6}{9}$