

3.1 Multiply and Divide Integers

NOTES

MATH 7

Write your questions here!



Multiplication =

You buy 3 tickets for \$5 each. How much did you spend?

Notation:

$3(5)$

$3(-5)$

$-3(5)$

$-3(-5)$

MULTIPLICATION RULES

When multiplying if the signs are the same the product is

When multiplying if the signs are different the product is

$(-2)(-4)$

-4×3

$3 \cdot 6$

-4×0

$2(-5)(-3)$

Division =

You paid \$15 for 3 hours tickets. How much did each ticket cost?

Notation:

$15 \div 3$

$\frac{-24}{4}$

$-12 \div 3$

$-20 \div (-4)$

$\frac{28}{-7}$

$9 \div 1$

$9 \div 0$

$\frac{4(-3)}{2}$

SUMMARY:

Now, summarize your notes here!



Perform the indicated operation.

1. $3 \times 5 =$

2. $36 \div (-12) =$

3. $-40 \div (-10) =$

4. $-6 \times 0 =$

5. $(6)(-10) =$

6. $-55 \div 5 =$

7. $\frac{63}{9} =$

8. $-6 \div (-1) =$

9. $(-4)(-10) =$

10. $10 \times (-3) =$

11. $\frac{-24}{12} =$

12. $33 \div (-3) =$

13. $8 \times (-2) =$

14. $-21 \div (-3) =$

15. $9 \times (-4) =$

16. $3 \cdot 8 =$

17. $10(-4) =$

18. $-5 \times (-9) =$

19. $\frac{-40}{-5} =$

20. $1 \div (-1) =$

21. $12 \div (-3) =$

Perform the indicated operations.

22. $3 \times 5 =$

23. $36 \div (-12) =$

24. $-40 \div (-10) =$

25. $-6 \times 0 =$

26. $(6)(-10) =$

27. $-55 \div 5 =$

Write a multiplication expression for each situation. Answer the question.

28. Karla borrowed \$5 each from 4 different friends. How much money does Karla owe her friends altogether?

Expression:

Answer:

29. The temperature increased 2° per hour for six hours. How many degrees did the temperature raise after six hours?

Expression:

Answer:

30. Jim was deep sea diving last week. He descends 3 feet every minute. How many feet will he descend in 10 minutes?

Expression:

Answer:

Write a division expression for each situation. Answer the question.

31. Keith borrowed a total of \$30 by borrowing the same amount of money from 5 different friends. How much money does Keith owe each friend?

Expression:

Answer:

32. The temperature fell 12° over 4 hours. What was the average change in temperature per hour?

Expression:

Answer:

33. Max lost 24 pounds in 8 weeks on his new weight-loss plan. What was his average change in weight per week?

Expression:

Answer:

34. Juan borrowed \$4 a day until he had borrowed a total of \$88. For how many days did he borrow money?

Expression:

Answer:

1. Perform the indicated operation.

$$-8(-3)$$

2. Perform the indicated operations.

$$-5(-3)(4)$$

3. Decide whether the following expressions are equal. Support your answer!

A) $-4(6) = 3(-8)$

B) $3 \cdot 10 = (-6)(5)$

C) $5(-2)(2) = -4 \cdot 5$

4. Fill in the question mark with an integer to make following expressions equal. Support your answer!

A) $-3 \cdot 6 = 9(?)$

B) $4(-9) = ? \cdot (-6)$

C) $-5(-?) = 2(20)$

EXIT TICKET –

SPRING ROUND!!!! How fast are you???

Go to Deltamath.com for some speed rounds. Once finished, show Mr. Brust and he will sign off below.

GOOD LUCK!!!

MATH 7

Write your
questions here!

MULTIPLY FRACTIONS

$$\frac{1}{2} \cdot \frac{7}{8}$$

$$\frac{3}{5} \cdot \frac{3}{4}$$

$$\left(\frac{2}{3}\right)\left(\frac{5}{2}\right)$$

$$\left(\frac{2}{7}\right)\left(-\frac{3}{5}\right)$$

MULTIPLY AN INTEGER AND A FRACTION

$$3 \cdot \frac{4}{5}$$

$$6 \cdot \frac{2}{3}$$

$$\frac{3}{4}(-2)$$



DIVIDE FRACTIONS

$$\frac{3}{4} \div \frac{7}{5}$$

$$\frac{1}{5} \div \left(\frac{3}{10}\right)$$

$$\left(-\frac{2}{3}\right) \div \left(-\frac{4}{5}\right)$$

DIVIDE AN INTEGER AND A FRACTION

$$3 \div \frac{4}{9}$$

$$6 \div \frac{3}{7}$$

$$\frac{5}{8} \div (-2)$$

SUMMARY:Now,
summarize
your notes
here!

Multiply. Reduce to simplest form if possible.

1. $\frac{3}{5} \cdot \frac{4}{3} =$

2. $\left(\frac{3}{5}\right)\left(-\frac{1}{4}\right) =$

3. $4 \cdot \frac{2}{3} =$

Divide. Reduce to simplest form if possible.

4. $\frac{3}{5} \div \frac{4}{3} =$

5. $\left(\frac{3}{5}\right) \div \left(-\frac{1}{4}\right) =$

6. $-3 \div \frac{4}{3} =$

Perform the indicated operation. Reduce to simplest form if possible.

7. $\frac{2}{5} \cdot \frac{5}{6} =$

8. $\left(-\frac{2}{5}\right)\left(-\frac{3}{7}\right) =$

9. $\frac{3}{4} \div \frac{5}{8} =$

10. $\left(-\frac{2}{5}\right) \div \left(\frac{7}{9}\right) =$

11. $\left(\frac{3}{4}\right)\left(-\frac{1}{4}\right) =$

12. $\frac{3}{8} \cdot 5 =$

13. $\frac{1}{2} \div \frac{4}{5} =$

14. $6 \div \left(-\frac{1}{4}\right) =$

15. $\frac{4}{5} \cdot \frac{2}{3} =$

16. $6 \cdot \left(-\frac{4}{3}\right) =$

17. $\left(-\frac{7}{8}\right) \div \left(-\frac{5}{4}\right) =$

18. $(-4)\left(\frac{4}{7}\right) =$

Perform the indicated operations. Reduce to simplest form if possible.

19. $\frac{3}{5} \cdot \frac{4}{3} \cdot \frac{4}{3} =$

20. $\left(\frac{3}{5}\right)\left(-\frac{1}{4}\right)(3) =$

21. $\frac{1}{2}(8)(5) =$

Write a multiplication expression for each situation. Answer the question.

22. Mr. Brust loves $\frac{1}{4}$ pound burgers from McDonalds. He eats 6 of these burgers for dinner. How much burger did he eat?

Expression:

Answer:

23. The temperature increased $\frac{4}{5}$ of a degree per hour for six hours. How many degrees did the temperature raise after six hours?

Expression:

Answer:

24. Jim was deep sea diving last week. He descends $\frac{3}{4}$ of a meter every minute. How many meters will he descend in 10 minutes?

Expression:

Answer:

Write a division expression for each situation. Answer the question.

25. Mr. Brust wants to share his $\frac{1}{4}$ burger with 2 of his kids. He cuts the burger into 3 equal parts. How much burger does each person get?

Expression:

Answer:

26. The temperature fell $\frac{3}{4}$ of a degree over $\frac{2}{3}$ of an hour. What was the average change in temperature per hour?

Expression:

Answer:

27. Max lost 24 pounds in $\frac{4}{5}$ of a month on his new weight-loss plan. What was his average change in weight per month?

Expression:

Answer:

1. Perform the indicated operation.

$$\frac{6}{7} \div \frac{5}{2} =$$

2. Perform the indicated operation.

$$(-4) \left(\frac{3}{5} \right) =$$

3. Decide whether the following expressions are equal. Support your answer!

A) $\frac{7}{8} \cdot \frac{1}{3} = \frac{7}{6} \cdot \frac{1}{4}$

B) $6 \cdot \frac{1}{8} = \frac{2}{2} \div \frac{4}{3}$

C) $\frac{1}{2} \div 4 = \frac{1}{3} \cdot 6$

4. Fill in the question mark with an integer to make following expressions equal. Support your answer!

A) $\frac{4}{9} \cdot \frac{?}{3} = \frac{16}{27}$

B) $5 \div \left(\frac{3}{8} \right) = \frac{?}{3}$

C) $\left(-\frac{5}{?} \right) \div \left(\frac{7}{4} \right) = -\frac{20}{21}$

EXIT TICKET –

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MATH 7

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MULTIPLY Mixed Numbers



$$3\frac{2}{3} \left(\frac{4}{5}\right)$$

$$2\frac{1}{4} \cdot 1\frac{2}{5}$$

$$4\frac{3}{4}(-2)$$

MULTIPLY Decimals

$$6.2 \cdot 8$$

$$3.5(4.2)$$

$$0.75(-2)$$



DIVIDE Mixed Numbers



$$2\frac{3}{4} \div \frac{7}{5}$$

$$\frac{4}{5} \div \left(3\frac{1}{2}\right)$$

$$(-3) \div \left(-2\frac{4}{5}\right)$$

DIVIDE Decimals

$$3.6 \div 2$$

$$6 \div 0.5$$

$$4.8 \div (-0.3)$$

SUMMARY:Now,
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Multiply (Mixed Numbers). Reduce to simplest form if possible.

1. $2\frac{3}{5} \cdot \frac{2}{3} =$

2. $\left(\frac{3}{5}\right)\left(-2\frac{1}{4}\right) =$

3. $4\frac{1}{2} \cdot 3\frac{1}{2} =$

Divide (Mixed Numbers). Reduce to simplest form if possible.

4. $2\frac{3}{4} \div \frac{4}{3} =$

5. $\left(-\frac{3}{5}\right) \div \left(-3\frac{1}{4}\right) =$

6. $-3\frac{1}{2} \div 1\frac{1}{3} =$

Multiply (Decimals).

7. $1.2 \cdot 5 =$

8. $(3.2)(-2.4) =$

9. $4 \cdot 0.6 =$

Divide (Decimals).

10. $4.5 \div 9 =$

11. $(12.6) \div (-3) =$

12. $-10.25 \div 4.1 =$

Perform the indicated operation. Reduce to simplest form if possible.

13. $2\frac{2}{3} \cdot \frac{5}{6} =$

14. $(-10)(-2.5) =$

15. $\frac{1}{2} \div 1\frac{5}{8} =$

16. $\left(-3\frac{2}{3}\right) \div (4) =$

17. $(18.4) \div (4) =$

18. $\frac{3}{8} \cdot 5\frac{1}{2} =$

Write a multiplication expression for each situation. Answer the question.

22. Sandra's hair was $5\frac{1}{3}$ inches long. Her hair dresser cut five-eighths of it off. How many inches of Sandra's hair was cut off?

Expression:

Answer:

23. The temperature increased $2\frac{4}{5}$ of a degree per hour for six hours. How many degrees did the temperature raise after six hours?

Expression:

Answer:

24. Jim was deep sea diving last week. He descends 1.7 of a meter every minute. How many meters will he descend in 10 minutes?

Expression:

Answer:

Write a division expression for each situation. Answer the question.

25. Mr. Brust has $2\frac{1}{4}$ pounds of candy from Halloween. He splits the candy into 4 piles. How much does each pile weigh?

Expression:

Answer:

26. The temperature fell 9 degrees over 1.5 of an hour. What was the average change in temperature per hour?

Expression:

Answer:

27. Max lost 24 pounds in $2\frac{1}{2}$ of a month on his new weight-loss plan. What was his average change in weight per month?

Expression:

Answer:

1. Perform the indicated operation.

$$\frac{5}{7} \div 2\frac{2}{3} =$$

2. Perform the indicated operation.

$$(-4)(3.2) =$$

3. Decide whether the following expressions are equal. Support your answer!

A) $2\frac{4}{5} \cdot \frac{1}{3} = 2\frac{4}{5} \div 3$

B) $6 \cdot 0.5 = 12.8 \div 4$

C) $\frac{3}{2} \div 4 = \frac{1}{3} \cdot 1\frac{1}{3}$

EXIT TICKET –

Mr. Sullivan finds a geo cake recipe that serves 6 people. He needs to make a cake that serves 18 people.

PART A

How many times bigger does Mr. Sullivan need to make the recipe?

PART B

Fill in the blanks below so that it will serve the recipe will serve 18 people.

6 Servings

- 2 $\frac{1}{4}$ cups all purpose flour
- 1.5 cups sugar
- 3 teaspoons baking powder
- $\frac{1}{2}$ teaspoon salt
- 1.75 cups of milk
- 2 large eggs
- $\frac{5}{4}$ teaspoon vanilla

18 Servings

- _____ cups all purpose flour
- _____ cups of sugar
- _____ teaspoons of baking powder
- _____ teaspoons salt
- _____ cups of milk
- _____ large eggs
- _____ teaspoons vanilla

MATH 7

Write your
questions here!

Complex Fractions

$$\frac{\frac{1}{4}}{\frac{2}{3}}$$

$$\frac{\frac{2}{3}}{4}$$

$$\frac{5}{2\frac{1}{2}}$$

Rate

You bike 30 miles in 5 hours. What is your average speed?

You jog 3 miles in $\frac{1}{3}$ hours. What is your average speed?You walk $1\frac{1}{3}$ miles in $\frac{2}{5}$ hours. What is your average speed?

Proportional

The following are proportional. Find the constant of proportionality.

Time (min)	Distance (meters)
$\frac{1}{3}$	$\frac{5}{2}$
$1\frac{1}{2}$	$11\frac{1}{4}$
$\frac{14}{15}$	7

Mr. Kelly uses $2\frac{1}{2}$ scoops of Whey Protein in 12 ounces of soy milk.

Scoops (#)	Soy Milk (ounces)
$2\frac{1}{2}$	
2	
$\frac{2}{3}$	

SUMMARY:Now,
summarize
your notes
here!

Divide the complex fractions. Reduce to simplest form if possible.

1.

$$\frac{\frac{3}{4}}{\frac{2}{5}}$$

2.

$$\frac{\frac{4}{2}}{\frac{3}{3}}$$

3.

$$\frac{\frac{3}{7}}{5}$$

Find the rate. LABEL YOUR ANSWER!

4. It rained $2\frac{3}{4}$ inches in 3 hours.
What is the average amount of rain per hour?

5. Dustin made $3\frac{1}{5}$ pies in $\frac{4}{5}$ of a day.
What is the average amount of pies per day?

6. $2\frac{2}{3}$ pounds of peanuts cost you 4 dollars.
What is the price per pound?

The following are proportional. Find k and write an equation to represent the situation.

7.

Time (min)	Distance (meters)
$1\frac{1}{2}$	$\frac{9}{4}$
3	$\frac{9}{2}$
5	$7\frac{1}{4}$

8.

Gas (liters)	Distance (km)
2	$\frac{3}{2}$
$2\frac{1}{2}$	$\frac{15}{8}$
$\frac{4}{5}$	$\frac{3}{5}$

9.

Gummy Bears (pound)	$\frac{1}{8}$	$\frac{12}{5}$	$3\frac{1}{2}$
Cost (dollars)	$\frac{5}{24}$	4	$\frac{35}{6}$

The following are proportional. Find k . Fill in the table and complete the sentence.

10. Caitlyn can swim 12 laps in $\frac{1}{4}$ hours. Find her average speed in laps per hour?

Time (hours)	Laps (#)
$\frac{1}{4}$	
$\frac{2}{3}$	

In $\frac{2}{3}$ hours, Caitlyn swims _____ laps.

11. Joey packed $2\frac{1}{4}$ boxes in $\frac{1}{4}$ hours. Find the average speed in boxes per hour.

Time (hours)	Boxes Packed (#)
$\frac{1}{4}$	
3	

In 3 hours, Joey packs _____ boxes.

12. You buy $2\frac{3}{4}$ yards of fabric for $4\frac{1}{2}$ dollars. Find the price per yard of fabric.

Length (yard)	Cost (\$)
$2\frac{3}{4}$	
$\frac{1}{2}$	

You buy $\frac{1}{2}$ a yard of fabric for _____ dollars.

13. Sophie can read $\frac{3}{4}$ pages in $\frac{3}{5}$ minutes. Find the average speed she can read in pages per minute.

Time (min)	Pages Read (#)
$\frac{3}{5}$	
$2\frac{2}{3}$	

Sophie reads _____ pages in $2\frac{2}{3}$ minutes.

1. Divide.

$$\frac{\frac{3}{4}}{\frac{2}{5}}$$

2. Anna made $2\frac{3}{5}$ cakes in $\frac{3}{4}$ of a day. What is the average amount of cakes per day?

3. Use unit rates to compare the prices of the following corn shops. Which shop has a better price? Justify!

Kelly Corn

$8\frac{3}{4}$ pounds
for
7 dollars

Corey Corn

$3\frac{1}{8}$ pounds
for
 $2\frac{1}{2}$ dollars

EXIT TICKET –

Mr. Bean eats $\frac{3}{4}$ of a burrito every $\frac{3}{5}$ days. Mr. Bean figures that he eats 4 burritos every 5 days. Is he correct? Explain why or why not.

Unit 3 Review

Perform the indicated operation. Express your answer in simplest form.

1. $2(-8) =$

2. $-\frac{3}{4} \cdot 5 =$

3. $\frac{1}{8} \div \frac{3}{5} =$

4. $5\left(2\frac{2}{3}\right) =$

5. $-10 \div \frac{1}{2} =$

6. $-2(-5.3) =$

7. $-15 \div 3 =$

8. $2\frac{2}{3} \div \frac{1}{4} =$

9. $\frac{\frac{3}{4}}{\frac{2}{5}}$

Write an expression to represent the following, then solve it!

10. Marcus has 15 Pokemon cards. His little brother has $\frac{2}{5}$ as many Pokemon cards. How many Pokemon cards does Marcus's little brother have?

11. Keri has $4\frac{3}{5}$ feet of licorice rope. She breaks it into 3 equal parts to share. How long is each part?

Find the rate. LABEL YOUR ANSWER!

12. Taylor eats $\frac{3}{4}$ of a pie $\frac{2}{3}$ of an hour. What is the average amount of pie eaten per hour?

Find k (constant of proportionality). Fill in the table and complete the sentence.

13. Marquise builds 6 model airplanes in $\frac{4}{5}$ of an hour. Find the rate at which Marquise builds in airplanes per hour.

Time (hours)	Airplanes (#)
$\frac{4}{5}$	
$\frac{1}{3}$	

In $\frac{1}{3}$ hours, Marquise builds _____ airplanes.

MULTIPLE CHOICE

14. Over a period of 3 hours, the outside temperature changed an average of -2.25° Fahrenheit per hour. Which statement correctly describes the change in the temperature from the beginning to the end of the 3 hour period?
- (A) The temperature decreased by 0.75 degrees Fahrenheit.
- (B) The temperature increased by 0.75 degrees Fahrenheit.
- (C) The temperature decreased by 6.75 degrees Fahrenheit.
- (D) The temperature increased by 6.75 degrees Fahrenheit.

-
15. Which situation can be modeled using this expression?

$$4\frac{1}{2} \div \frac{1}{4}$$

- (A) Kim has $4\frac{1}{2}$ cups of flour. She uses $\frac{1}{4}$ cup of flour for a recipe. How many cups of flour does Kim have remaining?
- (B) Alex has $4\frac{1}{2}$ pages to read for homework. So far, he has finished $\frac{1}{4}$ of his homework. How many pages has Alex read so far?
- (C) Ben has a $4\frac{1}{2}$ foot long sandwich. He cuts the sandwich into $\frac{1}{4}$ foot long pieces. How many pieces of sandwich does Ben have?
- (D) Stacy has $4\frac{1}{2}$ hours to get ready for a concert. She spends $\frac{1}{4}$ hour showering. How many hours does Stacy have remaining to get ready?