



TABE

MATH - D

Unit - 1

Lesson - 3

COMPARE

Fractions and Decimals

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# Lesson 3

## Compare Fractions and Decimals

6.NS.6.c – Medium, 7.NS.2.d – Medium

You can use a number line to compare and order fractions and decimals. When comparing a fraction to another fraction, you need to find a common denominator or convert the fractions to decimals. When comparing a mix of fractions and decimals, you need to convert the fractions to decimals. Fractions can be converted to decimals using long division.

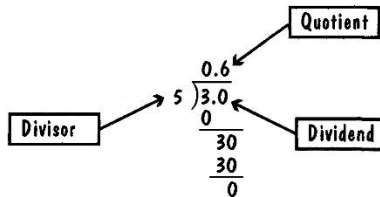
When you convert a fraction to a decimal, the decimal may terminate in 0 or repeat. A bar is used to indicate repeating decimals. For example,  $0.\overline{3} = 0.333333\dots$

**Example** Use a number line to compare the points  $-2.4$ ,  $-\frac{3}{5}$ , and  $1.8$ . Order the points from greatest to least.

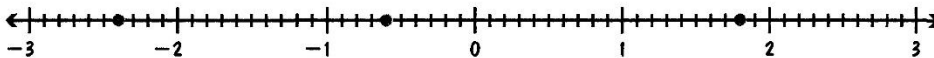
1) Evaluate the intervals on the number line. On this number line, intervals appear every tenth.

2) Use long division to convert  $-\frac{3}{5}$  into a decimal number.

- Write  $3 \div 5$  as a long division problem.
- Solve the division problem. The decimal point of the quotient is placed above the decimal point of the dividend.
- $-\frac{3}{5} = -0.6$



3) Plot the points on the number line. Positive numbers appear to the right of zero on the number line. Negative numbers appear to the left of zero on the number line.



4) From greatest to least:  $1.8$ ,  $-\frac{3}{5}$ ,  $-2.4$

1. Which fraction is greater than  $\frac{13}{16}$ ?

- A.  $\frac{3}{5}$                                       B.  $\frac{3}{4}$   
C.  $\frac{7}{8}$                                       D.  $\frac{2}{3}$

1. C  $\frac{13}{16} = 0.8125$ ,  $\frac{3}{5} = 0.6$ ,  $\frac{3}{4} = 0.75$ ,  $\frac{7}{8} = 0.875$ ,  $\frac{2}{3} = 0.\overline{6}$ ;

$0.875 > 0.8125$

### Strategy

Convert each fraction to a decimal number using long division and compare the decimal numbers.

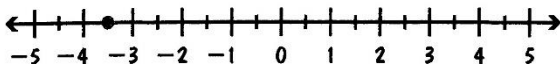
# Practice

Read each question. Select the correct answer.

1 Convert  $\frac{16}{9}$  to a decimal.

- A. 1.285714
- B.  $1.\overline{285714}$
- C. 0.7
- D.  $1.\overline{7}$

2 Identify the point on the number line.



- A. 3.5
- B. 4.5
- C. -3.5
- D. -4.5

3 Where is  $-\frac{7}{8}$  on a number line?

- A. between 1 and 2
- B. between 0 and 1
- C. between -1 and 0
- D. between -2 and -1

4 Order the numbers from GREATEST to LEAST.

$$-\frac{1}{4} \quad -4 \quad -2.4 \quad \frac{5}{6}$$

- A.  $\frac{5}{6}$ ,  $-\frac{1}{4}$ , -2.4, -4
- B.  $-\frac{1}{4}$ ,  $\frac{5}{6}$ , -4, -2.4
- C. -4, -2.4,  $-\frac{1}{4}$ ,  $\frac{5}{6}$
- D. -2.4,  $-\frac{1}{4}$ ,  $\frac{5}{6}$ , -4

5 Convert  $\frac{7}{9}$  to a decimal.

- A. 0.7
- B.  $0.\overline{7}$
- C. 0.9
- D.  $0.\overline{9}$

6 Which number has 3 digits that repeat in its decimal equivalent?

- A.  $\frac{3}{8}$
- B.  $\frac{9}{11}$
- C.  $\frac{11}{27}$
- D.  $\frac{7}{18}$

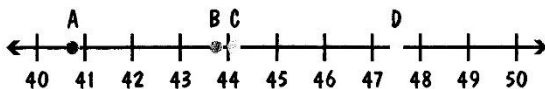
7 At a restaurant, one table with 5 people has a \$21 bill. Another table, with 6 people, has a \$25 bill. If each group splits the cost of the bill equally, which table will have a lower cost per person?

- A. The table with 5 people has a lower cost of \$4.17 per person.
- B. The table with 5 people has a lower cost of \$4.20 per person.
- C. The table with 6 people has a lower cost of \$4.17 per person.
- D. The table with 6 people has a lower cost of \$4.20 per person.

8 Which fraction is greater than  $\frac{33}{8}$ ?

- A.  $\frac{19}{6}$
- B.  $\frac{13}{3}$
- C.  $\frac{26}{9}$
- D.  $\frac{47}{12}$

Use the number line for items 9 and 10.



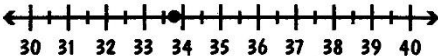
- 9 Which point is at 43.75 on the number line?
- A. A
  - B. B
  - C. C
  - D. D
- 10 Which two inequalities are true?
- A.  $A > B$
  - B.  $B > A$
  - C.  $B > C$
  - D.  $D > C$
- 11 Order the numbers from LEAST to GREATEST.
- A.  $-2\frac{3}{8}$ ,  $-0.2$ ,  $2$
  - B.  $2$ ,  $-0.2$ ,  $-2\frac{3}{8}$
  - C.  $-0.2$ ,  $-2\frac{3}{8}$ ,  $2$
  - D.  $2$ ,  $-2\frac{3}{8}$ ,  $-0.2$
- 12 Jennifer has a new cell phone that weighs  $5\frac{7}{8}$  ounces. What is the weight of Jennifer's cell phone as a decimal?
- A. 0.875
  - B.  $\overline{0.875}$
  - C. 5.875
  - D.  $\overline{5.875}$
- 13 Where is  $-17.8$  on a number line?
- A. between 16 and 17
  - B. between 17 and 18
  - C. between  $-16$  and  $-17$
  - D. between  $-17$  and  $-18$
- 14 Which decimal is less than  $\frac{4}{5}$ ?
- A. 0.75
  - B. 0.825
  - C. 0.85
  - D. 0.9
- 15 Which fraction is greater than 0.4?
- A.  $\frac{1}{3}$
  - B.  $\frac{2}{3}$
  - C.  $\frac{3}{8}$
  - D.  $\frac{4}{12}$
- 16 Kasey needs to replace a board on her fence that is 5 feet  $\frac{5}{8}$  inch high. She has boards with the following heights. Which of these boards could she trim to the right height?
- A. 5 feet  $\frac{1}{4}$  inch
  - B. 5 feet  $\frac{3}{8}$  inch
  - C. 5 feet  $\frac{1}{2}$  inch
  - D. 5 feet  $\frac{13}{16}$  inch

# Practice 3

# Compare Fractions and Decimals

6.NS.6.c – Medium, 7.NS.2.d – Medium

- 1 Identify the point on the number line.



- A. 33.2                      B. 33.8  
C. 34.2                      D. 34.8

- 2 The temperature must be greater than  $-3.3^{\circ}\text{C}$  for Spencer's experiment to work. Which is an acceptable temperature?

- A.  $-\frac{10}{3}^{\circ}\text{C}$                       B.  $-\frac{21}{7}^{\circ}\text{C}$   
C.  $-\frac{33}{10}^{\circ}\text{C}$                       D.  $-\frac{14}{4}^{\circ}\text{C}$

- 3 Convert  $\frac{17}{4}$  to a decimal.

- A. 0.235                      B. 1.75  
C. 3.75                      D. 4.25

- 4 Which number has two digits that repeat in its decimal equivalent?

- A.  $\frac{6}{7}$                               B.  $\frac{6}{8}$   
C.  $\frac{7}{11}$                             D.  $\frac{7}{12}$

- 5 Adam manufactures metal components that must be more than  $3\frac{5}{8}$  inches but less than  $3\frac{7}{8}$  inches in length. Which two measurements fit within this range?

- A.  $3\frac{29}{32}$  in.                      B.  $3\frac{11}{16}$  in.  
C.  $3\frac{13}{32}$  in.                      D.  $3\frac{3}{4}$  in.

- 6 Where is  $-\frac{20}{3}$  on a number line?

- A. between  $-8$  and  $-7$   
B. between  $-7$  and  $-6$   
C. between  $-6$  and  $-5$   
D. between  $-5$  and  $-4$

- 7 Dave works six hours and earns \$57. Kelly works eight hours and earns \$82. How much higher is Kelly's hourly wage than Dave's?

- A. \$0.25/hr                      B. \$0.50/hr  
C. \$0.75/hr                      D. \$1.25/hr

- 8 Order the numbers from LEAST to GREATEST.

$$-1.7 \quad -\frac{3}{8} \quad -\frac{6}{7} \quad -\frac{7}{6}$$

- A.  $-1.7, -\frac{7}{6}, -\frac{6}{7}, -\frac{3}{8}$   
B.  $-\frac{7}{6}, -\frac{6}{7}, -\frac{3}{8}, -1.7$   
C.  $-\frac{3}{8}, -\frac{6}{7}, -\frac{7}{6}, -1.7$   
D.  $-1.7, -\frac{3}{8}, -\frac{6}{7}, -\frac{7}{6}$

- 9 Charissa pays \$17 for five pounds of scrap metal for a project. How much does she pay per pound for the scrap metal?

- A. \$3.40                      B. \$3.50  
C. \$3.60                      D. \$3.70

- 10 Which two fractions are greater than 1.2?

- A.  $\frac{13}{12}$   
B.  $\frac{16}{13}$   
C.  $\frac{18}{15}$   
D.  $\frac{21}{16}$   
E.  $\frac{21}{19}$   
F.  $\frac{19}{17}$

- 11 Mia uses eight gallons of gas to travel 180 miles. How many miles per gallon does Mia's car get?

- A. 21 mpg                      B. 21.5 mpg  
C. 22 mpg                      D. 22.5 mpg

- 12 Which fraction is greater than  $\frac{25}{7}$ ?

A.  $\frac{34}{15}$                       B.  $\frac{23}{5}$   
C.  $\frac{28}{9}$                         D.  $\frac{21}{6}$

- 13 A full box of nails weighs exactly 2.5 pounds. Which two of these are the exact weight?

A.  $\frac{50}{20}$  lb  
B.  $2\frac{3}{6}$  lb  
C.  $\frac{25}{8}$  lb  
D.  $\frac{75}{25}$  lb  
E.  $\frac{40}{7}$  lb  
F.  $\frac{65}{20}$  lb

- 14 Order the numbers from GREATEST to LEAST.

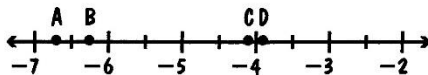
-4.8            -0.6             $-5\frac{1}{8}$

A.  $-5\frac{1}{8}$ , -4.8, -0.6  
B. -0.6, -4.8,  $-5\frac{1}{8}$   
C. -4.8,  $-5\frac{1}{8}$ , -0.6  
D.  $-5\frac{1}{8}$ , -0.6, -4.8

- 15 Jamal has 55 milliliters of water and splits it evenly into eight graduated cylinders. How much water is in each cylinder?

A. 0.875 mL                      B. 5.675 mL  
C. 6.375 mL                      D. 6.875 mL

Use the number line for items 16 and 17.



- 16 Which point is at -6.7 on the number line?

A. A                                      B. B  
C. C                                      D. D

- 17 Which four inequalities are true?

A.  $D > B$   
B.  $A < D$   
C.  $C > B$   
D.  $C > D$   
E.  $A > B$   
F.  $A < C$

- 18 Where is -13.1 on a number line?

A. between 13 and 14  
B. between 14 and 15  
C. between -13 and -14  
D. between -14 and -15

- 19 Bryan measures  $4\frac{3}{8}$  fluid ounces of water. How many fluid ounces is this?

A. 0.375 fl oz                      B. 3.75 fl oz  
C. 4.375 fl oz                      D. 4.75 fl oz

- 20 Three groups of students each measure the depth of water in inches after collecting condensation. Which answer shows the numbers in order from LEAST to GREATEST?

A.  $-\frac{5}{4}$ , -1.2,  $-\frac{4}{5}$   
B. -1.2,  $-\frac{5}{4}$ ,  $-\frac{4}{5}$   
C.  $-\frac{4}{5}$ , -1.2,  $-\frac{5}{4}$   
D.  $-\frac{4}{5}$ ,  $-\frac{5}{4}$ , -1.2

# Math-D Lesson-3 Key

## Lesson 3

### Compare Fractions and Decimals

(6.NS.6.c, 7.NS.2.d)

1. D. Use long division to convert  $\frac{16}{9}$  into a decimal number. Because 7 repeats itself in all decimal places, the answer is a repeating decimal.
2. C. The point is located halfway between  $-4$  and  $-3$  on the number line, so the point lies at  $-3.5$ .
3. C. When converted to a decimal ( $0.875$ ) and plotted on a number line, the point  $-\frac{7}{8}$  appears to the right of  $-1$  and to the left of  $0$ .
4. A. Use long division to convert the fractions to decimals.  $-\frac{1}{4} = -0.25$  and  $\frac{5}{6} = 0.8\bar{3}$ . When arranged on a number line, the largest positive number appears farthest to the right (greatest). The largest negative number appears farthest to the left (least).
5. B. Use long division to divide 7 by 9. When you do so, the quotient is a repeating decimal.
6. C. Use long division to convert each fraction into its decimal equivalent.  $\frac{11}{27} = 0.40\bar{7}$
7. C. Dividing each bill by the number of people at the table results in a per person cost of  $\$4.20$  for the table of 5 people and  $\$4.1\bar{6}$  for the table of 6 people. Because  $\$4.1\bar{6}$  is a repeating decimal, it rounds up to  $\$4.17$ .
8. B. Use long division to determine the decimal equivalent of each fraction. The decimal equivalent of  $\frac{13}{3}$  is  $4.\bar{3}$ , which is greater than the decimal equivalent of  $\frac{33}{8}$ ,  $4.125$ .
9. B. The point  $43.75$  lies between  $43$  and  $44$  on the number line. Therefore,  $43.75$  is Point  $B$  on the number line.
10. B, D.  $B$  is to the right of  $A$ , so  $B$  is greater than  $A$ .  $D$  is to the right of  $C$ , so  $D$  is greater than  $C$ .
11. A. Use long division to convert the fractions to decimals.  $-2\frac{3}{8} = -2.375$ . When arranged on a number line, the largest negative number appears farthest to the left (least) and the largest positive number appears farthest to the right (greatest).
12. C. Use long division to convert  $\frac{7}{8}$  into a decimal number.  $\frac{7}{8} = 0.875$ , so  $5\frac{7}{8} = 5.875$ .
13. D. Since  $-18 < -17.8$  and  $-17.8 < -17$ ,  $-17.8$  will be between  $-17$  and  $-18$  on a number line.
14. A.  $\frac{4}{5}$  is  $0.8$ .  $0.75$  is less than  $0.8$ .
15. B.  $\frac{2}{3}$  is  $0.\overline{66}$ .  $0.66$  is greater than  $0.4$ .
16. D.  $\frac{5}{8}$  is  $0.625$ . The board must be longer than  $5.625$  inches.  $\frac{13}{16}$  is  $0.8125$ , so the board is  $5.8125$ , which could be trimmed down.

# Math-D Practice-3 Key

## Practice 3 Compare Fractions and Decimals

pp. 6-7

(6.NS.6.c, 7.NS.2.d)

1. B. The point is less than 34 and more than 33.5, so the point lies at 33.8.
2. B. Use division to convert the fractions to decimals.  $-\frac{21}{7}$  is  $-3$ , which is greater than  $-3.3$ , so it is the only acceptable temperature.
3. D. Use division to divide 17 by 4 to get the answer 4.25.
4. C. Use division to convert each fraction to a decimal.  $\frac{7}{11}$  is  $0.\overline{63}$ . The 63 after the decimal is repeated.
5. B, D.  $\frac{5}{8}$  is 0.625 and  $\frac{7}{8}$  is 0.875. Therefore, the range is between 3.625 and 3.875 inches.  $\frac{11}{16}$  is 0.6875, so 3.6875 inches is in the range.  $\frac{3}{4}$  is 0.75, so 3.75 inches is in the range.
6. B. Use division to convert  $-\frac{20}{3}$  to a decimal.  $-\frac{20}{3}$  is  $-6.\overline{6}$ . When plotted on a number line, the point  $-6.\overline{6}$  appears to the right of  $-7$  and to the left of  $-6$ .
7. C. Divide the amount of money earned by the number of hours worked. Dave's wage is 57 divided by 6, or \$9.50 per hour. Kelly's wage is 82 divided by 8, or \$10.25 per hour. Subtract Dave's wage from Kelly's wage to get a \$0.75 per hour difference.
8. A. Use division to convert the fractions to decimals.  $-\frac{3}{8} = -0.375$ ,  $-\frac{6}{7}$  rounds to  $-0.86$ , and  $-\frac{7}{6}$  rounds to  $-1.17$ . When arranged on a number line, the largest negative number ( $-1.7$ ) appears farthest to the left (least), and the smallest negative number ( $-\frac{3}{8}$ ) appears farthest to the right (greatest).
9. A. Divide the amount of money paid by the weight of scrap metal. Charissa pays \$3.40 per pound for her scrap metal.
10. B, D. Convert the fractions to decimals.  $\frac{16}{13}$  rounds to 1.23 and  $\frac{21}{16}$  rounds to 1.31, which are both greater than 1.2.
11. D. Divide the number of miles by the number of gallons of gas. 180 divided by 8 is 22.5. Mia's car gets 22.5 miles per gallon.
12. B. 23 divided by 5 is 4.6, which is the only decimal greater than  $\frac{25}{7}$ , which rounds to 3.57.
13. A, B. Use division to convert the fractions to decimals.  $\frac{50}{20}$  is 2.5.  $\frac{3}{6}$  is 0.5. Add 0.5 to 2 to get 2.5.
14. B. When arranged on a number line, the smallest negative number ( $-0.6$ ) appears farthest to the right (greatest), and the largest negative number ( $-5\frac{1}{8}$ ) appears farthest to the left (least).
15. D. Divide the amount of water by the number of graduated cylinders. Each graduated cylinder has 6.875 milliliters of water.
16. A. The point  $-6.7$  is to the left of  $-6.5$  and to the right of  $-7$ , so it is Point A on the number line.
17. A, B, C, F. On a number line, a number is greater if it is to the right of the other number. D is to the right of A and B. C is to the right of A and B.
18. C. The point  $-13.1$  is to the left of  $-13$  and to the right of  $-14$ .
19. C. Divide 3 by 8, which equals 0.375. Then add 0.375 to 4 to get 4.375.
20. A. Use division to convert the fractions to decimals.  $-\frac{5}{4} = -1.25$  and  $-\frac{4}{5} = -0.8$ . When arranged on a number line, the largest negative number ( $-\frac{5}{4}$ ) appears farthest to the left (least), and the smallest negative number ( $-\frac{4}{5}$ ) appears farthest to the right (greatest).