

MTH1W Unit 1 Review Handout

1. Which of the following sets are infinite?

- a) $\{\dots, -3, -2, -1, 0\}$ b) $\{2, 4, 6, 8, 10\}$ c) $\{1, 2, 3, 4, \dots\}$ d) $\{-1, \frac{-1}{2}, \frac{-1}{4}, \frac{-1}{8}, \frac{-1}{16}\}$

2. Fill in the chart to show which number sets each number belongs to.

	Number	N	W	Z	Q	Q'	R
a)	-3						
b)	$\frac{4}{5}$						
c)	$\overline{8.34}$						
d)	5						
e)	0						
f)	-2.3476...						
g)	$\sqrt{5}$						

3. Evaluate.

- a) $-4 + (+3)$ b) $3(+5)$ c) $5 - (-3)$ d) $-(-4)$
 e) $\frac{-12}{4}$ f) $-7 - (+1)$ g) $(-28) \div (-7)$ h) $5 - (+2)$
 i) $-5 - (-8)$ j) $9 + (-12)$ k) $(-5)(-4)$ l) $12 \div (-6)$

4. Simplify using BEDMAS.

- a) $(3-5)x(-4)$ b) $(2+3x4)^2$ c) $3 - (-4) \div (-4)x(3)$
 d) $2(2-5)x(-2 - (-8))$ e) $5 - (4-6)^2x(-3)$ f) $-3(-4 + (-10) \div 5) - 3^2$
 g) $\frac{3 \bullet 5 - (2+4)}{(8 \div 2x(-3)) \div 4}$ h) $2 + 3[-4 + 3(-2)]$

5. Write each terminating decimal as a reduced fraction.

- a) 0.4 b) -1.35 c) 12.8432 d) 0.000 003

6. Write each repeating decimal as a reduced fraction.

- a) $0.\overline{5}$ b) $0.\overline{32}$ c) $3.\overline{16}$ d) $-2.\overline{8}$

7. List all possible subsets of the set {a,b,c}.

8. List the members of each set using set notation { }.

- a) whole numbers from 0 to 10 b) odd integers greater than 30

9. Describe the density property to a friend who does not know what it is. Use your own words.

10. Find the limit for each sequence if it has one.

- a) $-3.4, -3.04, -3.004, -3.0004, \dots$ b) $4.21, 4.2121, 4.212121, \dots$
 c) $\frac{3}{1}, \frac{3}{2}, \frac{3}{3}, \frac{3}{4}, \frac{3}{5}, \frac{3}{6}, \dots$ d) $1^2, 2^2, 3^2, 4^2, 5^2, \dots$

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11. Order the fractions from least to greatest. (compare numerators or denominators)

a) $\frac{1}{5}, \frac{1}{7}, \frac{1}{3}$

b) $\frac{-1}{8}, \frac{-1}{10}, \frac{-1}{3}$

c) $\frac{-2}{3}, \frac{-2}{5}, \frac{-4}{3}$

12. Determine the value of each.

a) $\frac{1}{3}$ of 51

b) $\frac{1}{4}$ of 100

13. Use $<$ or $>$ to complete each statement.

a) $\frac{2}{7} \square \frac{5}{7}$

b) $\frac{3}{5} \square \frac{3}{8}$

c) $\frac{-19}{21} \square \frac{-15}{21}$

d) $\frac{-2}{5} \square \frac{-2}{3}$

14. Determine an equivalent fraction in lowest terms (reduced).

a) $\frac{45}{20}$

b) $\frac{-82}{28}$

c) $\frac{-3}{-12}$

15. Use $<$ or $>$ to complete each statement. Determine equivalent fractions to compare. Show your work.

a) $\frac{3}{7} \square \frac{5}{9}$

b) $\frac{-3}{4} \square \frac{-2}{3}$

c) $\frac{7}{12} \square \frac{5}{6}$

16. Write each improper fraction as a mixed number in lowest terms.

a) $\frac{35}{14}$

b) $\frac{-28}{3}$

c) $\frac{-14}{-5}$

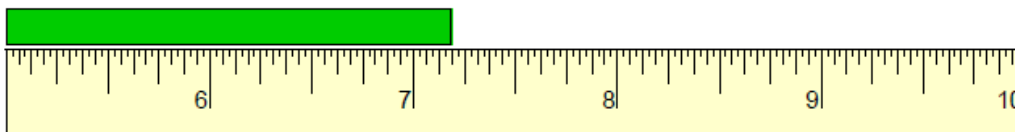
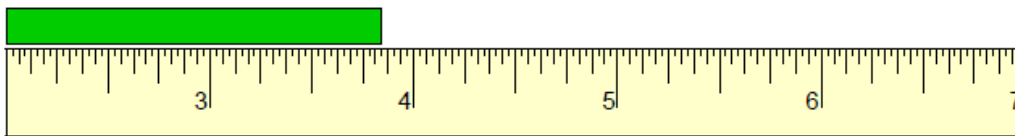
17. Write each mixed number as an improper fraction in lowest terms.

a) $5\frac{1}{7}$

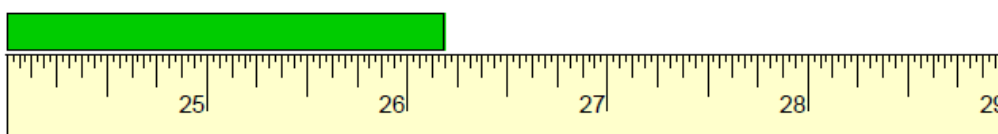
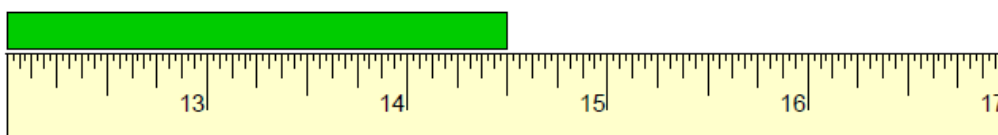
b) $-3\frac{4}{5}$

c) $-1\frac{1}{2}$

18. Write the measurement of each line in inches.



19. Write the measurement of each line in feet and inches.



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20. Evaluate. Express your answer as a fraction in lowest terms.

a) $\frac{2}{3} - \left(-\frac{4}{5}\right)$ b) $\frac{-3}{4} + \frac{5}{6}$ c) $3\frac{1}{2} - \left(+\frac{4}{5}\right)$ d) $\frac{-5}{3} - \left(-2\frac{3}{4}\right)$

21. Evaluate. Express your answer as a fraction in lowest terms.

a) $\left(\frac{-10}{3}\right)\left(\frac{-9}{20}\right)$ b) $-3\frac{1}{2} \div \frac{2}{3}$ c) $\left(3\frac{1}{4}\right)\left(-2\frac{4}{5}\right)$ d) $\frac{-7}{10} \div 5$

22. Evaluate. Express your answer as a fraction in lowest terms.

a) $2\frac{3}{5} \div \left(\frac{5}{6} - \frac{1}{2}\right)$ b) $\left(\frac{4}{5} - \frac{1}{3}\right)\left(\frac{2}{3} + \frac{5}{7}\right)$ c) $\left(\frac{-2}{3}\right) \div \left(\frac{-11}{3}\right) + \frac{4}{5}$ d) $\frac{1}{4}\left(\frac{-4}{5}\right) - 3\left(\frac{5}{2}\right)$

23. It takes $3\frac{1}{3}$ hours to fly from Winnipeg to Vancouver. It takes $32\frac{1}{4}$ hours to drive from Winnipeg to Vancouver.

How many hours would you save by flying?

24. Liban and Safeyah each mowed part of their lawn on the weekend. Liban mowed one quarter of the lawn, then Safeyah mowed half of what was left to mow. What fraction of the lawn was mowed?

25. Determine which is a better deal by first determining a unit rate. Show your work.

500 mL of ketchup for \$4.25

650 mL of ketchup for \$5.55

26. Write each ratio in lowest terms.

a) 18 : 6 b) $\frac{1}{2} : \frac{2}{3}$ c) 1.6 : 2.8

27. Complete the table.

	Percent	Decimal	Fraction	Ratio
a)		0.32		
b)			$\frac{7}{10}$	
c)				3:5
d)	82%			
e)			$2\frac{3}{4}$	

28. Determine:

a) 45% of 250

b) 35 out of 60 as a percent

c) what number 36.8 is 40% of

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29. Evaluate. Leave answers as fractions in lowest terms....no decimals.

- a) $(-3)^2$ b) -3^2 c) $(4)^{-2}$ d) $(-1)^3$ e) $(-5)^0$
 f) $\left(\frac{-2}{3}\right)^2$ g) $(3^{-1})^{-3}$ h) $(-2)^{-3}$ i) -2^0 j) $(5^2)^{-1}$

30. Write as a single power, then evaluate. Leave answers as fractions in lowest terms...no decimals.

- a) $\left[(-2)^3\right]^2$ b) $(5^3)^{-1}$ c) $(-2)^4(-2)^3$ d) $\frac{3^{12}}{3^7}$
 e) $\frac{\left(\frac{2}{3}\right)^5\left(\frac{2}{3}\right)^2}{\left(\frac{2}{3}\right)^4}$ f) $3(3^2)$ g) $\frac{(-5)^3}{(-5)^5}$ h) $\frac{(4^3)(4^{-4})}{(4^2)(4^{-1})}$

31. Convert to scientific notation.

- a) 8 200 000 b) -0.000 019 c) 324×10^6

32. Convert to standard notation.

- a) 2.43×10^{-5} b) 8.7×10^6

Answers:

- 1.a)infinite b)finite c)infinite d) finite 2. a) ZQR b) QR c) QR d) NWZQR e) WZQR f) Q' R g) Q'R
 3. a) -1 b) 15 c) 8 d) 4 e) -3 f) -8 g) 4 h) 3 i) 3 j) -3 k) 20 l) -2 4. a) 8 b) 196 c) 0 d) -36 e) 17 f) -27 g) -3 h) -28
 5. a) 2/5 b) -1 7/20 c) 12 527/625 d) 3/1000000 6. a) 5/9 b) 32/99 c) 3 16/99 d) -2 8/9
 7. { } {a} {b} {c} {a,b} {a,c} {b,c} {a,b,c} 8. a) {1,2,3,4,5,6,7,8,9,10} b) {31,33,35,37,...}
 9. A set has the density property if there is always a member of the set that fits between every pair of set members
 10. a) -3 b) $4 \frac{21}{99} = 4 \frac{7}{33}$ c) 0 d) no limit 11. a) 1/7,1/5,1/3 b) -1/3,-1/8,-1/10 c) -4/3,-2/3,-2/5
 12. a) 17 b) 25 13. a) < b) > c) < d) > 14. a) 9/4 b) -41/14 c) ¼ 15. a) < b) < c) <
 16. a) 2 ½ b) -9 1/3 c) 2 4/5 17. a) 36/7 b) -19/5 c) -3/2 18. a) 3 27/32" b) 7 3/16"
 19. a) 1' 2 ½" b) 2' 2 3/16" 20. a) 22/15 b) 1/12 c) 27/10 d) 13/12 21. a) 3/2 b) -21/4 c) -91/10 d) -7/50
 22. a) 39/5 b) 29/45 c) 54/55 d) -77/10 23. 28 11/12 hours or 28 h 55 min. 24. 5/8 was mowed
 25. 500 mL bottle (\$0.0085/mL) 26. a) 3:1 b) 3:4 c) 4:7
 27. a) 32%, 0.32, 8/25, 8:25 b) 70%, 0.7, 7/10, 7:10 c) 60%, 0.6, 3/5, 3:5 d) 82%, 0.82, 41/50, 41:50
 d) 275%, 2.75, 2 ¾, 11: 4
 28. a) 112.5 b) 58.333...% c) 92
 29. a) 9 b) -9 c) 1/16 d) -1 e) 1 f) 4/9 g) 27 h) -1/8 i) -1 j) 1/25
 30. a) $(-2)^6 = 62$ b) $5^{\wedge}(-3) = 1/125$ c) $(-2)^{\wedge}7 = -128$ d) $3^{\wedge}5 = 243$ e) $(2/3)^{\wedge}3 = 8/27$ f) $3^{\wedge}3 = 27$ g) $(-5)^{\wedge}(-2) = 1/25$
 h) $4^{\wedge}(-2) = 1/16$
 31. a) 8.2×10^6 b) $-1.9 \times 10^{\wedge}(-5)$ c) $3.24 \times 10^{\wedge}8$ 32. a) 0.0000243 b) 8700000