

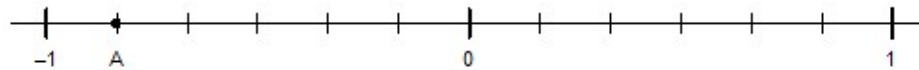
January Exam Review

Unit 3

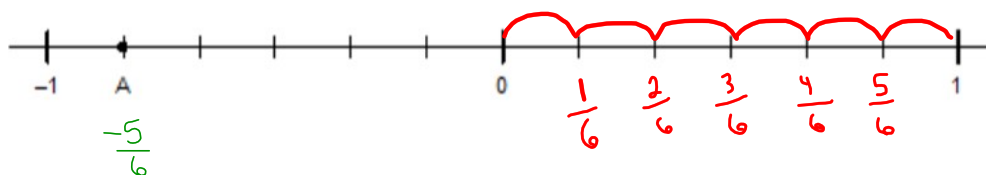
Answers are on Slides 34 - 38

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1. Which rational number is represented by the letter A on the number line?



- a. -0.8
- b. $-\frac{5}{6}$
- c. -5
- d. -0.5



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2. Determine this sum.

$$\frac{14}{7} + \left(-\frac{15}{14}\right)$$

a. $\frac{13}{14}$

b. $-\frac{13}{14}$

c. $\frac{1}{7}$

d. $-\frac{1}{7}$

$$\frac{14}{7} + \left(-\frac{15}{14}\right)$$

$$\frac{28}{14} + \frac{-15}{14} = \frac{13}{14}$$

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3. A student first borrowed \$40.25, then borrowed another \$15.75 from his father. He then paid back \$20.75. How much does he still owe his father?

a. \$3.75

b. \$45.25

c. \$24.50

d. \$35.25

$$\begin{aligned} & -40.25 - 15.75 + 20.75 \\ & = -35.25 \end{aligned}$$

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4. Yesterday, the temperature of a freezer was -4.4°C . When the technician checked the freezer today, its temperature had decreased by 9.8°C . Determine the temperature of the freezer today.
- a. -5.4°C b. 5.4°C c. 14.2°C d. -14.2°C

$$-4.4 - 9.8 = -14.2$$

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5. Determine this difference.

$$\frac{18}{7} - \left(-\frac{5}{7}\right)$$

a. $\frac{23}{7}$

b. $-\frac{13}{7}$

c. $-\frac{23}{7}$

d. $\frac{13}{7}$

$$\frac{18}{7} + \left(+\frac{5}{7}\right) = \frac{23}{7}$$

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6. Which expressions have the same answer as $-1\frac{2}{3} + (+5)$? +5, $-1\frac{2}{3}$

i) $5 + 1\frac{2}{3}$ +5, $+1\frac{2}{3}$

ii) $-5 + 1\frac{2}{3}$ -5, $+1\frac{2}{3}$

iii) $-1\frac{2}{3} + 5$ +5, $-1\frac{2}{3}$

iv) $5 - 1\frac{2}{3}$ +5, $-1\frac{2}{3}$

a. iii and iv b. ii and iv c. i and ii d. i and iii

iii iv

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7. Determine this difference.

$-\frac{5}{2} - \left(-\frac{9}{5}\right)$

a. $-\frac{43}{10}$ b. $-\frac{7}{10}$ c. $\frac{7}{10}$ d. $\frac{43}{10}$

$-\frac{5}{2} - \left(-\frac{9}{5}\right)$

$\frac{-25}{10} + \left(\frac{+18}{10}\right)$

$= -\frac{7}{10}$

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8. Determine this difference.

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

a. $-7\frac{1}{6}$

b. $7\frac{1}{6}$

c. $2\frac{1}{6}$

d. $-2\frac{1}{6}$

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

$$-\frac{14}{3} - \frac{5}{2}$$

$$-\frac{28}{6} - \frac{15}{6}$$

$$= -\frac{43}{6}$$

$$= -7\frac{1}{6}$$

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9. Determine this product.

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

a. $-\frac{11}{4}$

b. $-\frac{15}{8}$

c. $\frac{15}{8}$

d. $\frac{11}{4}$

$$\left(-\frac{3}{2}\right)\left(-\frac{5}{4}\right) = \frac{15}{8}$$

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10. Determine this product.

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

a. $7\frac{4}{5}$

b. $2\frac{8}{15}$

c. $-2\frac{8}{15}$

d. $-7\frac{4}{5}$

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

$$\left(\frac{-13}{3}\right)\left(\frac{9}{5}\right) = \frac{-39}{5} = -7\frac{4}{5}$$

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11. The price of a share changed by $-\$1.45$. A person owns 190 shares.
By how much did his shares change in value?

a. $-\$85.50$

b. $-\$275.50$

c. $+\$275.50$

d. $-\$131.03$

$$(-1.45) \times (190)$$

$$= -275.50$$

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12. Determine this quotient.

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

a. $-\frac{7}{5}$

b. $-\frac{4}{35}$

c. $-\frac{35}{4}$

d. $-\frac{5}{7}$

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

$$-\frac{5}{2} \times \frac{7}{2} = -\frac{35}{4}$$

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13. Determine this quotient.

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

a. $-1\frac{11}{15}$

b. $-\frac{15}{26}$

c. $-\frac{10}{39}$

d. $-3\frac{9}{10}$

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

$$\frac{3}{2} \div \left(-\frac{13}{5}\right)$$

$$\frac{3}{2} \times \frac{-5}{13}$$

$$= -\frac{15}{26}$$

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14. Evaluate.

$$\frac{5}{6} + \left(\frac{4}{3} + \frac{1}{6} \right)$$

a. $\frac{25}{54}$

b. $\frac{8}{15}$

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

d. $\frac{19}{24}$

$$\frac{5}{6} + \left(\frac{4}{3} + \frac{1}{6} \right)$$

$$\frac{5}{6} + \left(\frac{8}{6} + \frac{1}{6} \right)$$

$$\frac{5}{6} + \frac{9}{6}$$

$$\frac{5}{6} + \frac{9}{6}$$

$$= \frac{5}{9}$$

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15. A student has \$1298 in her savings account. She withdraws \$95 each week. A formula for calculating the amount of money remaining in her account is $A = T - 95w$, where T dollars is the original amount and w is the number of weeks she has been withdrawing money. Determine the amount of money remaining in her account after 13 weeks.

a. \$63

b. \$1235

c. \$1216

d. \$1190

$$A = T - 95w$$

$$A = 1298 - 95(13)$$

$$A = 1298 - 1235$$

$$A = 63$$

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16. Order these numbers from least to greatest.

$$-\frac{3}{4}, -\frac{7}{9}, -\frac{5}{6}, -\frac{2}{3}$$

-0.75 (blue arrow from $-\frac{3}{4}$)
 $-0.7\bar{7}$ (green arrow from $-\frac{7}{9}$)
 $-0.8\bar{3}$ (red arrow from $-\frac{5}{6}$)
 $-0.6\bar{6}$ (purple arrow from $-\frac{2}{3}$)

$$-\frac{5}{6}, -\frac{7}{9}, -\frac{3}{4}, -\frac{2}{3}$$

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17. Determine this sum.

$$-4\frac{3}{4} + \left(-1\frac{3}{5}\right)$$

$$-\frac{19}{4} + -\frac{8}{5}$$

$$-\frac{95}{20} + -\frac{32}{20}$$

$$= -\frac{127}{20}$$

$$= -6\frac{7}{20}$$

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18. Determine this difference.

$$\frac{6}{5} + \left(+\frac{7}{5} \right)$$

$$= \frac{13}{5}$$

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19. Evaluate this expression.

$$\frac{11}{2} - \left(-\frac{7}{5} \right) + \left(-\frac{13}{4} \right)$$

$$\frac{110}{20} - \left(-\frac{28}{20} \right) + \left(-\frac{65}{20} \right)$$

$$\frac{138}{20} + \frac{-65}{20}$$

$$= \frac{73}{20}$$

$$= 3 \frac{13}{20}$$

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20. Determine this product.

$$\left(3\frac{1}{2}\right)\left(-3\frac{2}{3}\right)$$

$$\left(\frac{7}{2}\right)\left(-\frac{11}{3}\right)$$

$$= -\frac{77}{6}$$

$$= -12\frac{5}{6}$$

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21. Determine this product.

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

$$\left(\frac{9}{4}\right)\left(-\frac{5}{7}\right)$$

$$\frac{-45}{28}$$

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22. Determine this quotient.

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

$$\frac{-4}{\cancel{3}} \times \frac{\cancel{3}^1}{5}$$

$$\frac{4}{5}$$

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23. Determine this quotient.

$$\left(-8\frac{2}{5}\right) \div \left(-1\frac{4}{5}\right)$$

$$\left(-\frac{42}{5}\right) \div \left(-\frac{9}{5}\right)$$

$$\frac{\cancel{42}^{-14}}{\cancel{5}} \times \frac{\cancel{5}^1}{9^3}$$

$$\left(-\frac{14}{1}\right) \left(-\frac{1}{3}\right)$$

$$= \frac{14}{3}$$

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

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24. Evaluate.

$$\frac{2}{3} - \left(\frac{\cancel{1}7}{\cancel{3}12} \right) \left(-\frac{\cancel{1}4}{\cancel{2}13} \right)$$

$$\left(\frac{2}{3} \right) - \left(\frac{-7}{3} \right) \left(-\frac{1}{3} \right)$$

$$\frac{2}{3} - \frac{1}{9}$$

$$\frac{6}{9} - \frac{1}{9}$$

$$\frac{5}{9}$$

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25. Evaluate.

$$1\frac{7}{8} \times 2\frac{2}{5} - 1\frac{3}{4}$$

$$\frac{\cancel{15}^3}{\cancel{2}8} \times \frac{\cancel{12}^3}{\cancel{5}1} - \frac{7}{4}$$

$$\frac{3}{2} \times \frac{3}{1} - \frac{7}{4}$$

$$\frac{9}{2} - \frac{7}{4}$$

$$\frac{18}{4} - \frac{7}{4}$$

$$= \frac{11}{4}$$

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

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26. Evaluate.

$$\left[\frac{1}{3} + \frac{3}{5} \right] \div \left[\left(\frac{-5}{3} \right) \times \frac{12}{5} \right]$$

$$\left[\frac{5}{15} + \frac{9}{15} \right] \div \left[\frac{-1}{3} \times \frac{4}{5} \right]$$

$$\left[\frac{14}{15} \right] \div \left[\frac{-4}{15} \right]$$

$$\frac{14}{15} \times \frac{15}{4 \cdot 2}$$

$$\frac{7}{1} \times \frac{-1}{2}$$

$$= -\frac{7}{2}$$

$$= -3\frac{1}{2}$$

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27. Evaluate: $\left[\frac{8^2}{9} \times \left(\frac{-5}{312} \right) \right] \div \left(\frac{4}{9} \right)$

$$\frac{2}{9} \times \frac{-5}{3} \div \frac{-4}{9}$$

$$\left[\frac{-10}{3} \right] \times \frac{-9^{-1}}{4 \cdot 2}$$

$$\left[\frac{-5}{3} \right] \times \left[\frac{-1}{2} \right]$$

$$= \frac{5}{6}$$

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28. Melissa earns \$45.25 working in a coffee shop, and \$18.25 for babysitting. She spends \$31.64 on art supplies and \$15.48 on a computer game.
- Write an addition statement to represent Melissa's income and expenditure.
 - How much money does Melissa have left?

a) $45.25 + 18.25 - 31.64 - 15.48$

b) $= \$16.38$

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29. Evaluate this expression. Show your work.

$$-2\frac{3}{4} - (-4\frac{1}{3}) - 2\frac{5}{6}$$

$$-\frac{11}{4} - (-\frac{13}{3}) - \frac{17}{6}$$

$$\frac{-33}{12} + \frac{+52}{12} - \frac{34}{12}$$

$$= \frac{-15}{12}$$

$$= \frac{-5}{4}$$

$$= -1\frac{1}{4}$$

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30. A fishing resort has 21 cabins, all of which need to be repainted.
The average cost of painting a cabin is \$490.47.
- Write a multiplication statement with rational numbers to determine the cost of painting the cabins.
 - The resort has a budget of \$10 524.00.
How much money will be left in the budget after all the cabins are painted?

$$\begin{aligned} a) & (21)(490.47) \\ & = \$10\,299.87 \end{aligned}$$

$$\begin{aligned} b) & 10\,524 - 10\,299.87 \\ & = \$224.13 \end{aligned}$$

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31. Evaluate. Show your work.

$$\left[1\frac{5}{7} \times \left(-3\frac{5}{6} \right) \right] + \left[\left(-2\frac{1}{10} \right) \div 0\frac{7}{8} \right]$$

$$\left[\frac{12}{7} \times -\frac{23}{6} \right] + \left[\frac{-21}{10} \div \frac{7}{8} \right]$$

$$\left[\frac{12}{7} \times -\frac{23}{6} \right] + \left[\frac{-21}{10} \times \frac{8}{7} \right]$$

$$\left[\frac{-46}{7} \right] + \left[\frac{-3}{5} \times \frac{8}{7} \right]$$

$$\left[\frac{-46}{7} \right] + \left[\frac{-12}{5} \right]$$

$$\frac{-46}{7} \times \frac{-5}{12}$$

$$\frac{-23}{7} \times \frac{-5}{12}$$

$$\frac{-23}{7} \times \frac{-5}{6}$$

$$= \frac{115}{42}$$

$$= 2\frac{31}{42}$$

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January Exam **Review - Unit 3**
Answer Section

MULTIPLE CHOICE

1. ANS: B	PTS: 1	DIF: Easy	REF: 3.1 What Is a Rational Number?
2. ANS: A	PTS: 1	DIF: Moderate	REF: 3.2 Adding Rational Numbers
3. ANS: D	PTS: 1	DIF: Moderate	REF: 3.2 Adding Rational Numbers
4. ANS: D	PTS: 1	DIF: Moderate	REF: 3.2 Adding Rational Numbers
5. ANS: A	PTS: 1	DIF: Easy	REF: 3.3 Subtracting Rational Numbers
6. ANS: A	PTS: 1	DIF: Easy	REF: 3.3 Subtracting Rational Numbers
7. ANS: B	PTS: 1	DIF: Moderate	REF: 3.3 Subtracting Rational Numbers
8. ANS: A	PTS: 1	DIF: Moderate	REF: 3.3 Subtracting Rational Numbers
9. ANS: C	PTS: 1	DIF: Moderate	REF: 3.4 Multiplying Rational Numbers
10. ANS: D	PTS: 1	DIF: Moderate	REF: 3.4 Multiplying Rational Numbers
11. ANS: B	PTS: 1	DIF: Moderate	REF: 3.4 Multiplying Rational Numbers
12. ANS: C	PTS: 1	DIF: Easy	REF: 3.5 Dividing Rational Numbers
13. ANS: B	PTS: 1	DIF: Moderate	REF: 3.5 Dividing Rational Numbers
14. ANS: C	PTS: 1	DIF: Moderate	REF: 3.6 Order of Operations with
15. ANS: A	PTS: 1	DIF: Moderate	REF: 3.6 Order of Operations with

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SHORT ANSWER

16. ANS:
 $-\frac{5}{6}, -\frac{7}{9}, -\frac{3}{4}, -\frac{2}{3}$
- PTS: 1 DIF: Difficult REF: 3.1 What Is a Rational Number?
 LOC: 9.N3 TOP: Number KEY: Conceptual Understanding | Procedural Knowledge
17. ANS:
 $-6\frac{7}{20}$
- PTS: 1 DIF: Moderate REF: 3.2 Adding Rational Numbers
 LOC: 9.N3 TOP: Number KEY: Procedural Knowledge
18. ANS:
 $\frac{13}{5}$
- PTS: 1 DIF: Easy REF: 3.3 Subtracting Rational Numbers
 LOC: 9.N3 TOP: Number KEY: Procedural Knowledge
19. ANS:
 $\frac{73}{20}$
- PTS: 1 DIF: Difficult REF: 3.3 Subtracting Rational Numbers
 LOC: 9.N3 TOP: Number KEY: Procedural Knowledge
20. ANS:
 $-12\frac{5}{6}$
- PTS: 1 DIF: Moderate REF: 3.4 Multiplying Rational Numbers
 LOC: 9.N3 TOP: Number KEY: Procedural Knowledge

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21. ANS:
 $\frac{45}{28}$
 PTS: 1 DIF: Difficult REF: 3.4 Multiplying Rational Numbers
 LOC: 9.N3 TOP: Number KEY: Procedural Knowledge

22. ANS:
 $\frac{4}{5}$
 PTS: 1 DIF: Easy REF: 3.5 Dividing Rational Numbers
 LOC: 9.N3 TOP: Number KEY: Procedural Knowledge

23. ANS:
 $4\frac{2}{3}$
 PTS: 1 DIF: Moderate REF: 3.5 Dividing Rational Numbers
 LOC: 9.N3 TOP: Number KEY: Procedural Knowledge

24. ANS:
 $\frac{5}{9}$
 PTS: 1 DIF: Easy REF: 3.6 Order of Operations with Rational Numbers
 LOC: 9.N4 TOP: Number KEY: Procedural Knowledge

25. ANS:
 $2\frac{3}{4}$
 PTS: 1 DIF: Easy REF: 3.6 Order of Operations with Rational Numbers
 LOC: 9.N4 TOP: Number KEY: Procedural Knowledge

26. ANS:
 $-\frac{7}{2}$, or $-3\frac{1}{2}$
 PTS: 1 DIF: Moderate REF: 3.6 Order of Operations with Rational Numbers
 LOC: 9.N4 TOP: Number KEY: Procedural Knowledge

27. ANS:
 $\frac{5}{6}$
 PTS: 1 DIF: Difficult REF: 3.6 Order of Operations with Rational Numbers
 LOC: 9.N3 TOP: Number KEY: Procedural Knowledge

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PROBLEM

28. ANS:
 a) $45.25 + 18.25 + (-31.64) + (-15.48) = 16.38$
 b) Melissa has \$16.38 left.
 PTS: 1 DIF: Moderate REF: 3.2 Adding Rational Numbers
 LOC: 9.N3 TOP: Number KEY: Problem-Solving Skills

29. ANS:

$$-2\frac{3}{4} - (-4\frac{1}{3}) - 2\frac{5}{6}$$

$$= -\frac{11}{4} + \frac{13}{3} - \frac{17}{6}$$

$$= -\frac{33}{12} + \frac{52}{12} - \frac{34}{12}$$

$$= \frac{-15}{12}$$

$$= -1\frac{1}{4}$$
 PTS: 1 DIF: Moderate REF: 3.3 Subtracting Rational Numbers
 LOC: 9.N3 TOP: Number KEY: Problem-Solving Skills | Communication

30. ANS:
 a) $21 \times 490.47 = 10\,299.87$
 b) $\$10\,524.00 - \$10\,299.87 = \$224.13$
 PTS: 1 DIF: Moderate REF: 3.4 Multiplying Rational Numbers
 LOC: 9.N3 TOP: Number KEY: Procedural Knowledge

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31. ANS:

$$\begin{aligned} & \left[1\frac{5}{7} \times \left(-3\frac{5}{6} \right) \right] + \left[\left(-2\frac{1}{10} \right) + 0\frac{7}{8} \right] \\ &= \left[\frac{12}{7} \times \left(-\frac{23}{6} \right) \right] + \left[\left(-\frac{21}{10} \right) + \frac{7}{8} \right] \\ &= \left[\frac{12}{7} \times \left(-\frac{23}{6} \right) \right] + \left[\left(-\frac{21}{10} \right) \times \frac{8}{7} \right] \\ &= \left(-\frac{46}{7} \right) + \left(-\frac{12}{5} \right) \\ &= \left(-\frac{46}{7} \right) \times \left(-\frac{5}{12} \right) \\ &= \frac{115}{42} \end{aligned}$$

PTS: 1

DIF: Easy

REF: 3.6 Order of Operations with Rational Numbers

LOC: 9.N3

TOP: Number

KEY: Procedural Knowledge

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