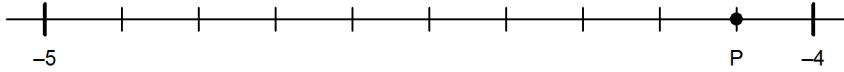


Math 9 Rational Numbers Review

Short Answer

1. Write the rational number represented by the letter P on the number line, as a decimal.



2. Write 3 rational numbers between -2.3 and -2.4 .

3. Which rational number is greater?
 3.3 , $3.\bar{3}$

4. Insert $<$, $>$, or $=$ to make each expression true.

a) $3.08 \square 3\frac{2}{25}$

b) $3\frac{1}{6} \square 3.11$

5. Determine this sum.
 $-5.23 + (-2.72)$

6. Determine this sum.
 $-\frac{3}{2} + \frac{2}{5}$

7. Determine this difference.
 $\frac{6}{5} - \left(-\frac{7}{5}\right)$

8. Determine this difference.
 $-\frac{10}{3} - \frac{13}{9}$

9. Determine this difference.
 $6\frac{1}{2} - \left(-5\frac{1}{3}\right)$

10. Which expressions have negative answers? Determine these negative answers.
i) $-6.4 - 24.5$
ii) $14.4 - (-15.1)$
iii) $-3.7 + (-32.4)$

11. Evaluate this expression.

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

12. Determine this product.

$$4 \times \left(-\frac{7}{3} \right)$$

13. Which products are less than 0?

i) $\left(-\frac{5}{12} \right) \left(\frac{9}{10} \right)$

ii) $\left(\frac{12}{5} \right) \left(-\frac{3}{8} \right)$

iii) $\left(-\frac{10}{9} \right) \left(-\frac{8}{3} \right)$

iv) $\left(\frac{3}{8} \right) \left(\frac{12}{5} \right)$

v) $\left(-\frac{12}{5} \right) \left(\frac{5}{12} \right)$

14. Determine this product.

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

15. Determine this product.

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

16. Determine this quotient.

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

17. Determine this quotient.

$$\frac{8}{63} \div \frac{4}{7}$$

18. Evaluate.

$$\frac{2}{3} - \left(-\frac{7}{12} \right) \left(-\frac{4}{21} \right)$$

19. Evaluate.

$$\left[\frac{1}{3} + \frac{3}{5} \right] \div \left[\left(-\frac{5}{9} \right) \times \frac{12}{25} \right]$$

20. Evaluate.

$$25.4 - 6.5 \times (8.7 - 4.7)$$

21. Evaluate.

$$\frac{0.6 \times 2.7}{0.162 \div 0.3}$$

22. Evaluate. Give your answer to the nearest hundredth.

$$\frac{3.6 - 3.9 \div (-2.6)}{(-5.2 + 1.5)^2}$$

Problem

23. 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?

24. This table shows the money earned and spent by Kelsie in the first month of operating her home based computer business.

Item	Income	Expenditure
New computer		\$760
Additional software		\$65
Contract No. 1	\$490	
Contract No. 2	\$390	
Miscellaneous expenses		\$260

- Write an addition statement to show Kelsie's income and expenditure.
- Did Kelsie make a profit in her business?

25. A model train leaves a station and makes these moves:

5.6 m forward, 4.3 m backward, 6.1 m forward, 2.2 m forward, 7.2 m backward, and 3.7 m forward.
How far is the train from its starting point?

26. Determine a rational number that makes the answer positive.

$$-3.5 - \square$$

27. Replace \square with a rational number to make the answer negative.
 $\square - (-4.6)$
28. Replace \square with a rational number to make each statement true.
- a) $\square \div 1.45 = -0.3$
- b) $\frac{7}{18} \div \square = -\frac{7}{12}$
29. At a desert resort, the temperature at 7 a.m. was 5°C .
The temperature increased by an average of 3.6°C each hour until it reached 32°C .
How long did it take to reach this temperature?
30. The formula for the vertical distance travelled by an object shot straight up is $d = ut + 0.5gt^2$, where d metres is the distance covered, u metres per second is the initial velocity, t seconds is the time elapsed, and g metres per square second is the downward acceleration due to gravity.
Determine the distance travelled when $u = 86$, $t = 4$, and $g = -9.8$.
31. Evaluate. Show your work.

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

Math 9 Rational Numbers Review Answer Section

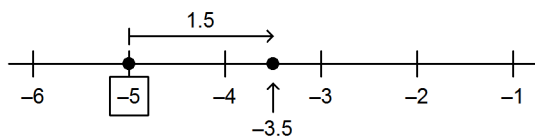
SHORT ANSWER

1. -4.1
2. Answers will vary. For example: -2.34 , -2.36 , and -2.365
3. $3\bar{3}$
4. a) $3.08 = 3\frac{2}{25}$
b) $3\frac{1}{6} > 3.11$
5. -7.95
6. $-\frac{11}{10}$
7. $\frac{13}{5}$
8. $-\frac{43}{9}$
9. $11\frac{5}{6}$
10. Expressions i and iii have negative answers.
i) $-6.4 - 24.5 = -30.9$
iii) $-3.7 + (-32.4) = -36.1$
11. $\frac{73}{20}$
12. $-\frac{28}{3}$
13. i, ii, and v
14. $-12\frac{5}{6}$
15. $\frac{45}{28}$
16. $\frac{4}{5}$
17. $\frac{2}{9}$
18. $\frac{5}{9}$
19. $-\frac{7}{2}$, or $-3\frac{1}{2}$
20. 60.6
21. 3

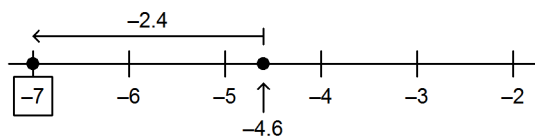
$$\begin{aligned}
 22. \quad & \frac{3.6 - 3.9 \div (-2.6)}{(-5.2 + 1.5)^2} \\
 &= \frac{3.6 + 1.5}{(-3.7)^2} \\
 &= \frac{5.1}{13.69} \\
 &\doteq 0.37
 \end{aligned}$$

PROBLEM

23. a) $45.25 + 18.25 + (-31.64) + (-15.48) = 16.38$
 b) Melissa has \$16.38 left.
24. a) $-\$760 + (-\$65) + \$490 + \$390 + (-\$260)$
 b) No, Kelsie had a loss of \$205.
25. $5.6 - 4.3 + 6.1 + 2.2 - 7.2 + 3.7 = 6.1$
 The train is 6.1 m from its starting point.
26. Visualize a number line.
 $-3.5 - \square$ represents the distance from \square to -3.5 .
 The answer is positive when the arrow points to the right.
 So, replace \square with a number to the left of -3.5 .



- 65 is to the left of -3.5 on the number line.
 So, 65 makes the answer positive: $-3.5 - (-5) = 1.5$
27. Visualize a number line.
 $\square - (-4.6)$ represents the distance from -4.6 to \square .
 The answer is negative when the arrow points to the left.
 So, replace \square with a number to the left of -4.6 .



- 67 is to the left of -4.6 on the number line.
 So, 67 makes the answer negative: $-7 - (-4.6) = -2.4$

28. a) $\square \div 1.45 = -0.3$

$$\square = 1.45 \times (-0.3)$$

$$\square = -0.435$$

b) $\frac{7}{18} \div \square = -\frac{7}{12}$

$$\square = \frac{7}{18} \div \left(-\frac{7}{12}\right)$$

$$\square = \frac{7}{18} \times \left(-\frac{12}{7}\right)$$

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

29. Temperature change:

$$32^{\circ}\text{C} - 5^{\circ}\text{C} = 27^{\circ}\text{C}$$

Number of hours the temperature increased:

$$27^{\circ}\text{C} \div 3.6^{\circ}\text{C/h} = 7.5 \text{ h}$$

So, it took 7.5 h to reach 32°C .

30. The distance travelled is 265.6 m.

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

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

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

$$= \left(-\frac{46}{7}\right) \div \left(-\frac{12}{5}\right)$$

$$= \left(-\frac{46}{7}\right) \times \left(-\frac{5}{12}\right)$$

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