

Math Mammoth End-of-the-Year Test - Grade 7

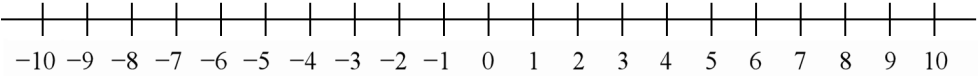
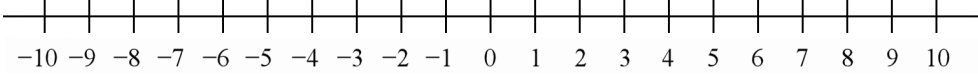
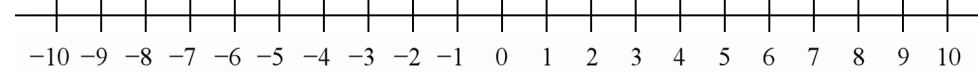
Integers

A calculator is not allowed for the problems in this section.

1. Give a real-life situation for the sum $-15 + 10$.

2. Give a real-life situation for the product $4 \cdot (-2)$.

3. Represent the following operations on the number line.

a. $-1 - 4$	
b. $-2 + 7$	
c. $-2 + (-7)$	

4. Solve.

a. $-13 + (-45) + 60 =$ _____

b. $-8 - (-7) =$ _____

c. $2 - (-17) + 6 =$ _____

d. $-3 \cdot (-8) =$ _____

e. $48 \div (-4) =$ _____

f. $(-2) \cdot 3 \cdot (-2) =$ _____

5. The expression $|20 - 31|$ gives us the distance between the numbers 20 and 31.
Write a similar expression for the distance between -5 and -15 and simplify it.

6. Divide. Give your answer as a fraction or mixed number in lowest terms.

a. $1 \div (-8)$

b. $-4 \div 16$

c. $-21 \div (-5)$

Rational Numbers

A calculator is not allowed for the problems in this section.

7. Multiply and divide. For problems with fractions, give your answer as a mixed number in lowest terms.

a. $-\frac{2}{7} \cdot \left(-3\frac{5}{8}\right)$	b. $27.5 \div 0.6$
c. $-0.7 \cdot 1.1 \cdot (-0.001)$	d. $(-0.12)^2$
e. $\frac{\frac{3}{4}}{\frac{5}{12}}$	f. $\frac{5\frac{1}{2}}{-\frac{7}{8}}$
g. $-\frac{1}{6} \cdot 1.2$	h. $-\frac{2}{5} \div (-0.1)$

8. Write the decimals as fractions.

a. 0.1748	b. -0.00483	c. 2.043928
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9. Write the fractions as decimals.

a. $-\frac{28}{10,000}$	b. $\frac{2,493}{100}$	c. $7\frac{1338}{100,000}$
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10. Convert to decimals. If you find a repeating pattern, give the repeating part. If you don't, round your answer to five decimals.

a. $\frac{7}{13}$	b. $1\frac{9}{11}$
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11. Give a real-life context for each multiplication or division. Then solve.

a. $1.2 \cdot 25$
b. $(3/5) \div 4$

Algebra

A calculator is not allowed for the problems in this section.

12. Simplify the expressions.

a. $7s + 2 + 8s - 12$	b. $x \cdot 5 \cdot x \cdot x \cdot x$	c. $3(a + b - 2)$
d. $0.02x + x$	e. $\frac{1}{3}(6w - 12)$	f. $-1.3a + 0.5 - 2.6a$

13. Factor the expressions (write them as multiplications).

a. $7x + 14$ =	b. $15 - 5y$ =	c. $21a + 24b - 9$ =
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14. Solve the equations.

a. $2x - 7 = -6$	b. $2 - 9 = -z + 4$
c. $120 = \frac{c}{-10}$	d. $2(x + \frac{1}{2}) = -15$
e. $\frac{2}{3}x = 266$	f. $x + 1\frac{1}{2} = \frac{3}{8}$

15. Chris can run at a constant speed of 12 km/h. How long will it take him to run from his home to the park, a distance of 0.8 km?

Remember to check that your answer is reasonable.

16. **a.** Which equation matches the situation?

A pair of binoculars is discounted by $\frac{1}{5}$ of its original price (p), and now they cost \$48.

$$\frac{w}{5} = 48$$

$$\frac{4w}{5} = 48$$

$$\frac{5w}{4} = 48$$

$$w - \frac{1}{5} = 48$$

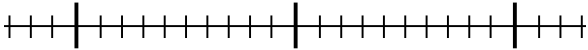
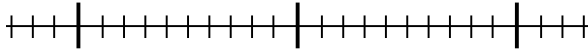
$$w - \frac{4}{5} = 48$$

$$5w - 4 = 48$$

- b.** Solve the equation to find the original price of the binoculars.

17. The perimeter of a rectangle is 254 cm. Its length is 55 cm. Represent the width of the rectangle with a variable and write an equation to solve for the width. Then solve your equation.

18. Solve the inequalities and plot their solution sets on a number line. Write appropriate multiples of ten under the bolded tick marks (for example, 30, 40, and 50).

<p>a. $3x - 7 < 83$</p> 	<p>b. $2x - 16.3 \geq 10.5$</p> 
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19. You need to buy canning jars. They cost \$15 a box, and you only have \$150 to spend. You also have a coupon that will give you a \$25 discount on your total. How many boxes can you buy at most?

a. Write an inequality for the problem and solve it.

b. Describe the solution of the inequality in words.

20. *Solve.

<p>a. $9y - 2 + y = 5y + 10$</p>	<p>b. $2(x + 7) = 3(x - 6)$</p>
<p>c. $\frac{y + 6}{-2} = -10$</p>	<p>d. $\frac{w}{2} - 3 = 0.8$</p>

21. *Draw a line that has a slope of $1/2$ and that goes through the point $(0, 4)$.

22. **a.** *Draw the line $y = -2x + 1$.

b. *What is its slope?

