Cumulative Review

for Chapters 5 to 7

Concepts and Skills

Write the next three terms of each pattern. Then tell the rule you used. (Lesson 5.1)

1. 1, 5, 25, 125, ________, ________, ________, ...

Rule: ________________________________

2. 8, 14, 20, 26, ________, ________, ________, ...

Rule: ________________________________

3. 6, 236, 6, 030, 5, 824, 5, 618, ________, ________, ________, ...

Rule: ________________________________

Complete the table. (Lesson 5.1)

4. The width of a rectangle is 7 centimeters long. Complete the table to find the area as the length increases.

<table>
<thead>
<tr>
<th>Length of Rectangle (cm)</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Area (cm²)</td>
<td>7</td>
<td>14</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Complete the table and answer the questions that follow. (Lesson 5.1)

5.

<table>
<thead>
<tr>
<th>Number of Identical Boxes</th>
<th>1</th>
<th>2</th>
<th>4</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mass (g)</td>
<td>200</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a. How much do 5 boxes weigh? __________

b. How many boxes weigh 600 grams? __________

c. If 100 grams cost $5, how much will 5 boxes cost? __________

Evaluate each expression for \( x = 5 \). (Lesson 5.2)

6. \( x + 9 \)

7. \( 16 - x \)

8. \( 4x \)

9. \( \frac{x}{5} \)

Simplify each expression. (Lesson 5.3)

10. \( y + 3y \)

11. \( a + a - 2 \)

12. \( 3b + 5b - 2b \)

13. \( 8c + 6 - 1 - c \)
Complete with =, >, or < for $d = 7$. \(\text{(Lesson 5.4)}\)

14. $d + 7 \bigcirc 15$
15. $3d - 10 \bigcirc 11$

16. $2d + 6 \bigcirc 3d - 2$
17. $(35 \div d) + 5 \bigcirc d$

Solve each equation. \(\text{(Lesson 5.4)}\)

18. $2e = 8$
19. $3f + 3 = 18$

20. $6g - 5 = 2g + 3$
21. $4h - 11 = h + 16$

$e = \underline{_____}$
$f = \underline{_____}$
$g = \underline{_____}$
$h = \underline{_____}$
Find the area of each rectangle. (Lesson 6.1)

22. \[ \frac{5}{7} \text{ m} \times \frac{3}{7} \text{ m} \]

23. \[ \frac{6}{8} \text{ ft} \times \frac{2}{3} \text{ ft} \]

Area: \[ \frac{15}{28} \text{ m}^2 \]  
Area: \[ \frac{2}{3} \text{ ft}^2 \]

24. A rectangular tray was placed on a square mat. The tray measures \( \frac{3}{4} \) feet by \( \frac{5}{6} \) feet. What is the area of the tray?
Complete to give both the base and the height in each triangle. (Lesson 6.2)

25.

Base: ________  
Height: ________

26.

Height: ________  
Base: ________

27.

Base: ________  
Height: ________

28.

Base: ________  
Height: ________

Find the area of each shaded triangle. (Lesson 6.3)

29.

Area = ________

30.

Area = ________
Find the area of each shaded triangle. (Lesson 6.3)

31.

\[ \text{Area} = \frac{1}{2} \times \text{base} \times \text{height} \]

32.

\[ \text{Area} = \frac{1}{2} \times \text{base} \times \text{height} \]

33.

\[ \text{Area} = \frac{1}{2} \times \text{base} \times \text{height} \]

34.

\[ \text{Area} = \frac{1}{2} \times \text{base} \times \text{height} \]
Find the total area of the shaded parts. (Lesson 6.3)

35. [Diagram of a triangle with sides 24 cm and 10 cm]

\[ \text{Area} = \ldots \]

Complete. (Lesson 7.1)

36. The ratio of the length of A to the length of B is \( \ldots : \ldots \).

37. The ratio of the length of C to the length of A is \( \ldots : \ldots \).

38. The ratio of the length of B to the total length of A, B, and C is \( \ldots : \ldots \).
Complete. (Lesson 7.2)

39. The ratio of the number of squares in Set A to the number of squares in Set B is ________ : ________.

40. The ratio of the number of groups in Set A to the number of groups in Set B is ________ : ________.

41. ________ : ________ = ________ : ________ in simplest form.

Find the missing number or term in each set of equivalent ratios. (Lesson 7.2)

42. 7 : 4 = 21 : ________

43. 5 : 9 = ________ : 63

44. 18 : 21 = 6 : ________

45. 108 : 72 = ________ : 6
Complete. (Lesson 7.4)
The heights of two buildings are shown.

46. The ratio of the height of Math Plaza to the height of Focus Tower is \( \frac{\underline{\hspace{1cm}}}{\underline{\hspace{1cm}}} \).

47. The height of Math Plaza is \( \underline{\hspace{1cm}} \) times the height of Focus Tower.

48. The height of Focus Tower is \( \underline{\hspace{1cm}} \) times the height of both buildings.

Express each ratio in simplest form. (Lesson 7.5)

49. \( 8 : 12 : 24 = \underline{\hspace{1cm}} : \underline{\hspace{1cm}} : \underline{\hspace{1cm}} \)

50. \( 21 : 9 : 36 = \underline{\hspace{1cm}} : \underline{\hspace{1cm}} : \underline{\hspace{1cm}} \)

Find the missing numbers or terms in each set of equivalent ratios. (Lesson 7.5)

51. \( 4 : 6 : 9 = 24 : \underline{\hspace{1cm}} : \underline{\hspace{1cm}} \)

52. \( 48 : 56 : 28 = \underline{\hspace{1cm}} : \underline{\hspace{1cm}} : 7 \)
Problem Solving
Solve. Show your work.

53. Mandy scores $b$ points in a basketball game. Jay scores 3 points less than Mandy. Kareem scores 2 times as many points as Mandy.
   a. Find the number of points that Jay scores in terms of $b$.
   
   b. Find the total number of points the three players score in terms of $b$.

54. David reads a book that has $(3x + 6)$ pages. Ellen reads a book that has $(4x - 4)$ pages.
   a. If $x = 7$, whose book has more pages?
   
   b. For what value of $x$ will the two books have the same number of pages?
Solve. Show your work.

55. In the figure, $BC = 18$ cm and $AD = BD$. The length of $BD$ is twice the length of $BC$. Find the area of the shaded triangle $ABC$.

56. $ABCD$ is a rectangle with a width of 12 centimeters. Its length is twice as long as its width. $AE = 12$ centimeters and $AF = BF$. Find the area of the shaded triangle $CEF$. 
Solve. Show your work.
Give your answer in either ratio form or fraction form.

57. There were 45 pennies in Container A and 79 pennies in Container B at first. Suki took 7 pennies from Container A. She then put them into Container B.

a. What is the ratio of the number of pennies in Container A to that in Container B at first?

b. Find the ratio of the number of pennies in Container A to that in Container B in the end. Express your answer in simplest form.
Solve. Draw a model to help you.

58. Peggy cycles 3 times as far as Dakota.
   a. Find the ratio of the distance that Peggy cycles to the distance that Dakota cycles. Give your answer in fraction form.
   
   b. How many times the combined distance is the distance that Peggy cycles?
Solve. Show your work.

   a. How much does it donate to Charity A in a year?
   b. How much does it donate to all three charities in a year?

60. The ratio of the number of boys to the number of girls in a camp is 3 : 7. There are 24 boys in the camp.
   a. How many girls are there in the camp?
   b. The camp fee is $50 per person. Find the total amount of fees the girls pay.