

MATHEMATICS 2201

FINAL REVIEW

Practice

Instructions:

1. Complete each unit at a time. Check your work and record your mark.
2. Go over the questions you did not answer correctly and learn from your mistake.
3. Now complete the next unit and follow steps 1-2.

UNIT	Questions	Your Mark
Inductive and Deductive Reasoning	1 – 12	
Angles	13 – 27	
Trigonometry	28 – 39	
Radicals	40 – 55	
Statistics	56 – 70	
Quadratic Functions	71 – 86	
Quadratic Equations	87 – 97	
Proportional Reasoning	98 - 116	

NAME: _____

Unit 2 – Inductive & Deductive Reasoning

1. Debbie gathered the following evidence.

$$4(33) = 132 \qquad 5(33) = 165 \qquad 6(33) = 198$$

Which conjecture, if any, is Debbie most likely to make from this evidence?

- When you multiply a one-digit number by 33, the sum of the digits in the product is equal to the original number.
 - When you multiply a one-digit number by 33, the first and last digits of the product form a number that is three times the original number.
 - When you multiply a two-digit number by 33, the first and last digits of the product form a number that is twice the original number.
 - None of the above conjectures can be made from this evidence.
2. Which conjecture, if any, could you make about the product of an odd integer and an even integer?
- The product will be an even integer.
 - The product will be an odd integer.
 - The product will be negative.
 - It is not possible to make a conjecture.

3. Jessica noticed a pattern when dividing these numbers by 4: 5^3 , 9^3 , 13^3 .

Determine the pattern and make a conjecture.

- When the cube of an odd number that is 1 less than a multiple of 4 is divided by 4, the decimal part of the result will be .75.
 - When the cube of an odd number that is 1 less than a multiple of 4 is divided by 4, the decimal part of the result will be .25.
 - When the cube of an odd number that is 1 more than a multiple of 4 is divided by 4, the decimal part of the result will be .25.
 - When the cube of an odd number that is 1 more than a multiple of 4 is divided by 4, the decimal part of the result will be .75.
4. All birds have backbones. Birds are the only animals that have feathers. Rosie is not a bird. What can be deduced about Rosie?
- Rosie has a backbone.
 - Rosie does not have feathers.
- Choice 2 only
 - Neither Choice 1 nor Choice 2
 - Choice 1 only
 - Choice 1 and Choice 2

5. Which of the following choices, if any, uses inductive reasoning to show that an odd number and an odd number sum to an even number?
- $2x + 2y = 2(x + y)$
 - $6 + 6 = 12$ and $4 + 6 = 10$
 - $2x + 2y + 1 = 2(x + y) + 1$
 - None of the above choices

6. What type of error, if any, occurs in the following proof?

$$\begin{aligned} 3 &= 3 \\ 7(3) &= 7(2 + 1) \\ 7(3) + 6 &= 7(2 + 1) + 6 \\ 21 + 6 &= 14 + 7 \\ 27 &= 21 \end{aligned}$$

- a false assumption or generalization
 - an error in reasoning
 - an error in calculation
 - There is no error in the proof.
7. Alison created a number trick in which she always ended with the original number. When Alison tried to prove her trick, however, it did not work. What type of error occurs in the proof?

n	Use n to represent any number.
$n + 4$	Add 4.
$2n + 4$	Multiply by 2.
$2n + 8$	Add 4.
$n + 4$	Divide by 2.
$n - 1$	Subtract 5.

- a false assumption or generalization
 - an error in reasoning
 - an error in calculation
 - There is no error in the proof.
8. Which type of reasoning does the following statement demonstrate?

Over the past 11 years, a tree has produced peaches each year.
Therefore, the tree will produce peaches this year.

- inductive reasoning
- deductive reasoning
- neither inductive nor deductive reasoning

9. Which number should appear in the centre of Figure 4?

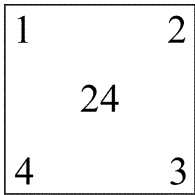


Figure 1

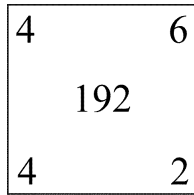


Figure 2

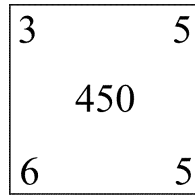


Figure 3

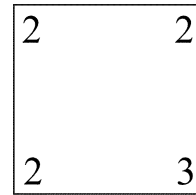


Figure 4

- a. 36
- b. 24
- c. 41
- d. 11

10. Which number should appear in the centre of Figure 4?

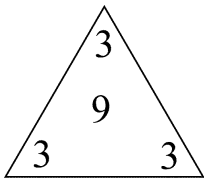


Figure 1

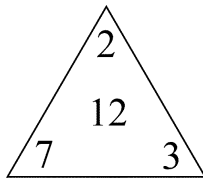


Figure 2

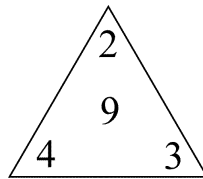


Figure 3

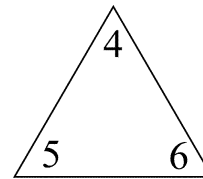


Figure 4

- a. 6
- b. 120
- c. 15
- d. 240

11. Which number should go in the grey square in this Sudoku puzzle?

1		5		3		2	6	
7		3			8		4	
			9					
	1							2
		7	5		6	8		
4							9	
					3			
	4		2			7		1
	6	2		5		4		9

- a. 7
- b. 3
- c. 1
- d. 5

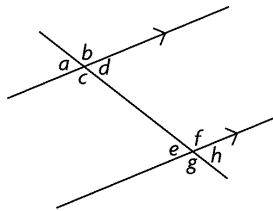
12. Which number should go in the grey square in this Sudoku puzzle?

1		5		3		2	6	
7		3			8		4	
			9					
	1							2
		7	5		6	8		
4							9	
					3			
	4		2			7		1
	6	2		5		4		9

- a. 6
- b. 2
- c. 4
- d. 8

Unit 3 – Reasoning with Angles and Triangles

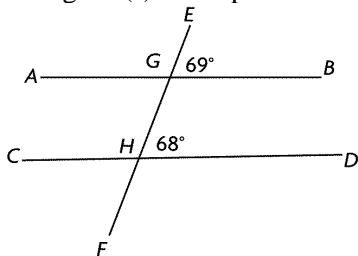
13. Which pairs of angles are equal in this diagram?



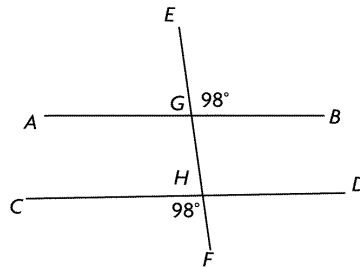
- a. $b = c, e = g, \text{ and } f = h$
- b. $b = f, c = g, \text{ and } d = h$
- c. $b = e, c = h, \text{ and } d = g$
- d. $b = a, c = e, \text{ and } d = f$

14. In which diagram(s) is AB parallel to CD ?

1.



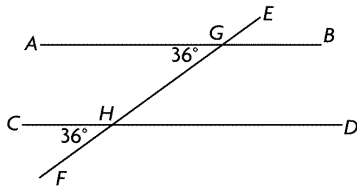
2.



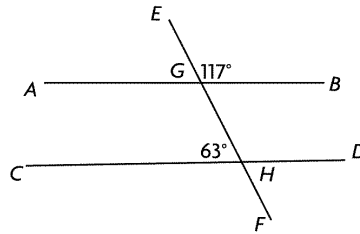
- a. Choice 1 only
- b. Choice 2 only
- c. Choice 1 and Choice 2
- d. Neither Choice 1 nor Choice 2

15. In which diagram(s) is AB parallel to CD ?

1.

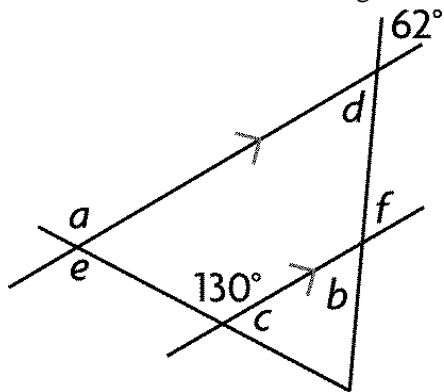


2.



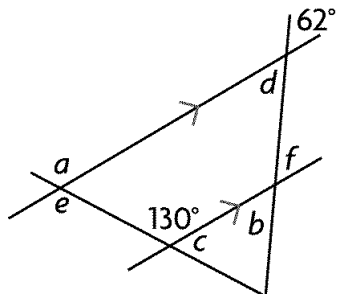
- a. Choice 1 only
- b. Choice 2 only
- c. Choice 1 and Choice 2
- d. Neither Choice 1 nor Choice 2

16. Which statement about the angles in this diagram is false?



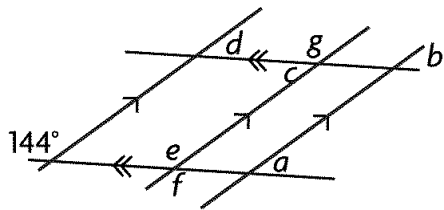
- a. $\angle e = 130^\circ$
- b. $\angle f = 62^\circ$
- c. $\angle c = 50^\circ$
- d. $\angle b = 50^\circ$

17. Which statement about the angles in this diagram is false?



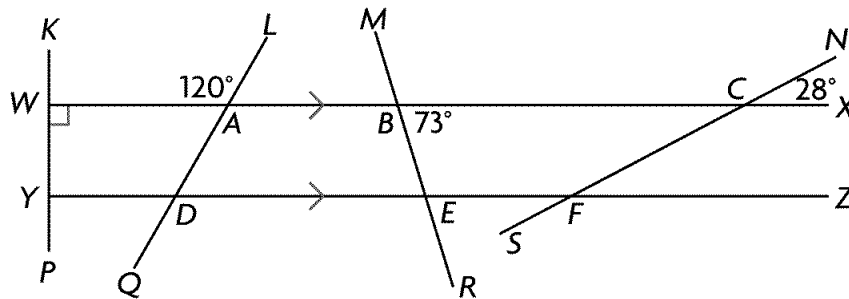
- a. $\angle d = \angle b$
- b. $\angle a = \angle e$
- c. $\angle b = \angle f$
- d. $\angle c = \angle e$

18. Which statement about the angles in this diagram is false?



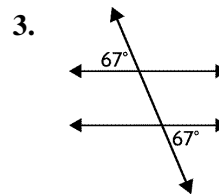
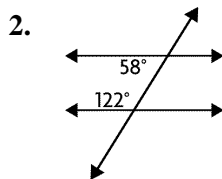
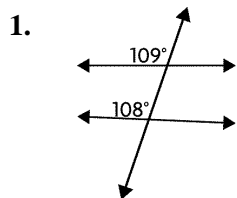
- a. $\angle e = \angle f$
- b. $\angle f = \angle a$
- c. $\angle a = \angle b$
- d. $\angle d = \angle c$

19. Which angle property proves $\angle PYD = 90^\circ$?



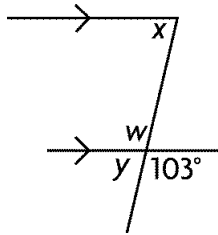
- a. corresponding angles
- b. alternate interior angles
- c. alternate exterior angles
- d. supplementary angles

20. In which diagrams are two lines parallel?



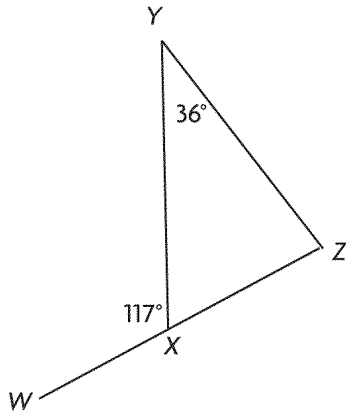
- a. Choice 1 only
- b. Choice 1 and Choice 3
- c. Choices 1, 2, and 3
- d. Choice 2 and Choice 3

21. Which are the correct measures of the indicated angles?



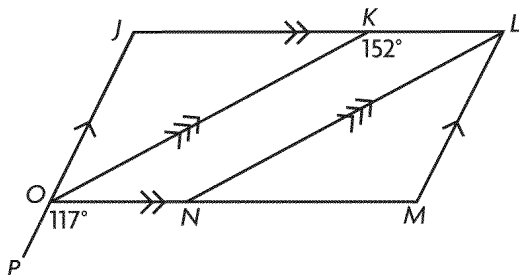
- a. $\angle w = 77^\circ$, $\angle x = 103^\circ$, $\angle y = 103^\circ$
- b. $\angle w = 77^\circ$, $\angle x = 77^\circ$, $\angle y = 103^\circ$
- c. $\angle w = 103^\circ$, $\angle x = 103^\circ$, $\angle y = 77^\circ$
- d. $\angle w = 103^\circ$, $\angle x = 77^\circ$, $\angle y = 77^\circ$

22. Which are the correct measures for $\angle YXZ$ and $\angle XZY$?



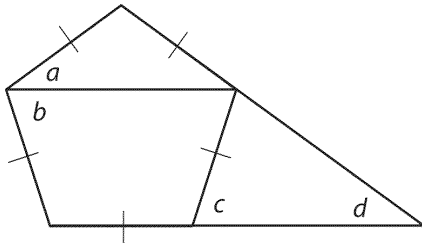
- a. $\angle YXZ = 63^\circ$, $\angle XZY = 91^\circ$
- b. $\angle YXZ = 53^\circ$, $\angle XZY = 91^\circ$
- c. $\angle YXZ = 63^\circ$, $\angle XZY = 81^\circ$
- d. $\angle YXZ = 53^\circ$, $\angle XZY = 81^\circ$

23. Which are the correct measures for $\angle OJK$, $\angle JKO$, and $\angle JOK$?



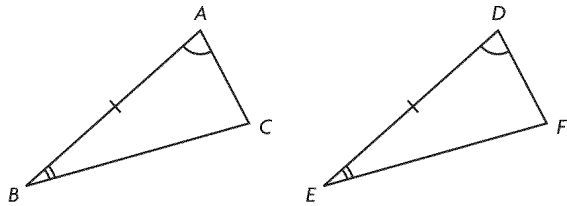
- a. $\angle OJK = 117^\circ$, $\angle JKO = 28^\circ$, and $\angle JOK = 35^\circ$
- b. $\angle OJK = 117^\circ$, $\angle JKO = 36^\circ$, and $\angle JOK = 37^\circ$
- c. $\angle OJK = 152^\circ$, $\angle JKO = 18^\circ$, and $\angle JOK = 10^\circ$
- d. $\angle OJK = 102^\circ$, $\angle JKO = 28^\circ$, and $\angle JOK = 50^\circ$

24. Determine the value of d .



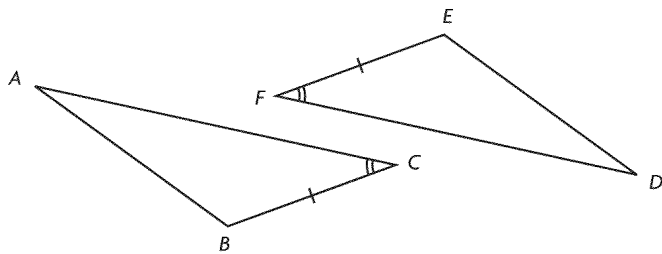
- a. 42°
- b. 36°
- c. 48°
- d. 52°

25. Can you prove these triangles are congruent? If so, how?



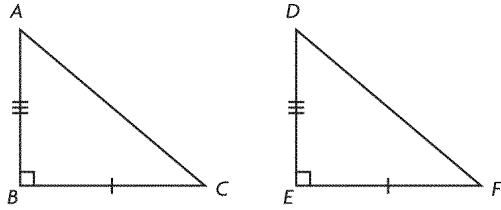
- a. Yes, by *SSS*.
- b. Yes, by *SAS*.
- c. Yes, by *ASA*.
- d. No, there is not enough information.

26. Can you prove these triangles are congruent? If so, how?



- a. Yes, by *SSS*.
- b. Yes, by *SAS*.
- c. Yes, by *ASA*.
- d. No, there is not enough information.

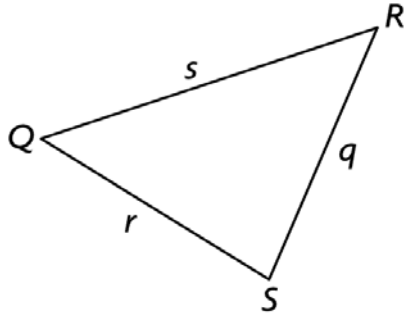
27. Can you prove these triangles are congruent? If so, how?



- Yes, by *SSS*.
- Yes, by *SAS*.
- Yes, by *ASA*.
- No, there is not enough information.

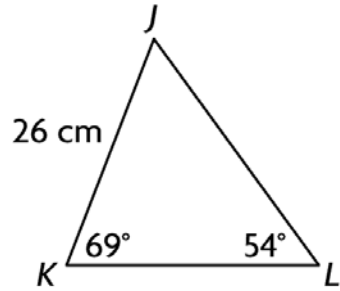
Unit 4 – Trigonometry

28. Which expression describes the ratios of side-angle pairs in $\triangle QRS$?

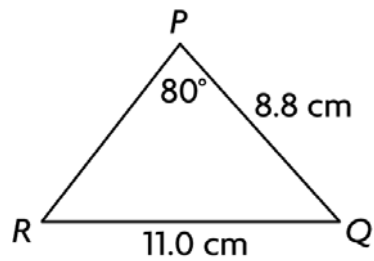


- $q(\sin R) = r(\sin S) = s(\sin Q)$
- $\frac{q}{\sin S} = \frac{r}{\sin Q} = \frac{s}{\sin R}$
- $\frac{s}{\sin S} = \frac{q}{\sin Q} = \frac{r}{\sin R}$
- $q(\sin Q) = r(\sin R) = s(\sin S)$

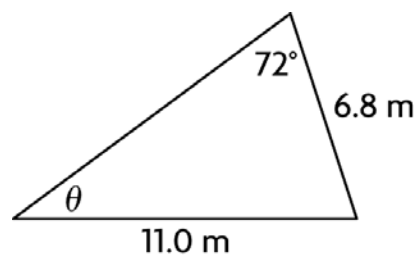
29. Determine the length of k to the nearest centimetre.



- a. 30 cm
b. 27 cm
c. 29 cm
d. 28 cm
30. Determine the measure of $\angle R$ to the nearest degree.



- a. 56°
b. 54°
c. 52°
d. 50°
31. Determine the measure of θ to the nearest degree.



- a. 40°
b. 38°
c. 36°
d. 42°

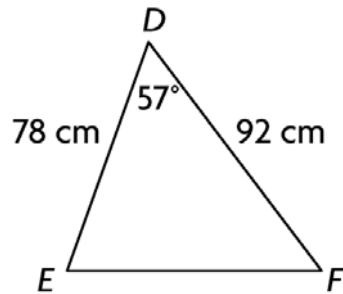
32. In $\triangle DEF$, $\angle D = 61^\circ$, $d = 23.9$ cm, and $\angle E = 38^\circ$.
Determine the length of side e to the nearest tenth of a centimetre.

- a. 18.4 cm
- b. 17.6 cm
- c. 16.0 cm
- d. 16.8 cm

33. In $\triangle ABC$, $a = 4.1$ cm, $b = 4.4$ cm, and $\angle B = 64^\circ$.
Determine the measure of $\angle C$ to the nearest degree.

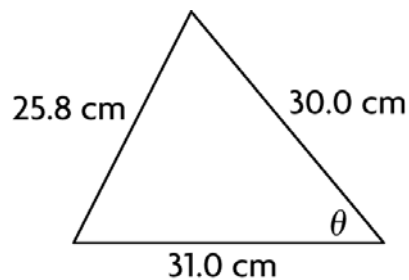
- a. 55°
- b. 61°
- c. 57°
- d. 59°

34. Determine the length of EF to the nearest centimetre.



- a. 88 cm
- b. 84 cm
- c. 86 cm
- d. 82 cm

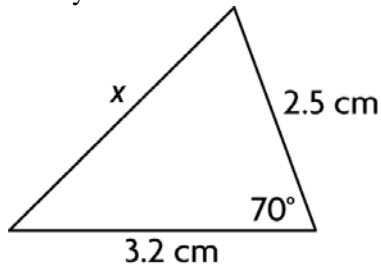
35. Determine the measure of θ to the nearest degree.



- a. 50°
- b. 40°
- c. 30°
- d. 60°

36. In $\triangle PQR$, $r = 52.5$ cm, $p = 40.0$ cm, and $\angle Q = 67^\circ$. Determine the measure of q to the nearest tenth of a centimetre.
- 52.1 cm
 - 53.2 cm
 - 55.2 cm
 - 54.1 cm

37. How you would determine the indicated side length, if it is possible?



- primary trigonometric ratios
 - the sine law
 - not possible
 - the cosine law
38. A bush pilot delivers supplies to a remote camp by flying 310 km in the direction $N12^\circ W$. While at the camp, the pilot receives a radio message to pick up a passenger at a village. The village is 70 km $S61^\circ W$ from the camp. How would you determine the distance from the village to the starting point?
- the cosine law
 - primary trigonometric ratios
 - the sine law
 - not possible
39. A radar operator on a ship discovers a large sunken vessel lying parallel to the ocean surface, 120 m directly below the ship. The length of the vessel is a clue to which wreck has been found. The radar operator measures the angles of depression to the front and back of the sunken vessel to be 55° and 46° . How long, to the nearest tenth of a metre, is the sunken vessel?
- 199.9 m
 - 201.8 m
 - 203.7 m
 - 198.0 m

Unit 6 – Radicals

40. Which of these equations are true?

I. $\sqrt{64} = 8$ II. $\sqrt[3]{(-3)^3} = \pm 3$ III. $\sqrt{-9} = -3$

- a. II only
- b. I and II
- c. I, II, and III
- d. I only

41. Which number is **not** an entire radical?

- a. $\sqrt{35}$
- b. $3\sqrt{42}$
- c. $\sqrt[3]{343}$
- d. $\sqrt{16}$

42. Which number is **not** a mixed radical?

- a. $7\sqrt{46}$
- b. $9\sqrt{22}$
- c. $\sqrt{19}$
- d. $4\sqrt{50}$

43. Which choice expresses each of these numbers as an entire radical?

$3\sqrt{6}$, $5\sqrt{42}$, $2\sqrt{11}$, $4\sqrt[3]{27}$

- a. 7.3, 32.4, 6.6, 12
- b. $\sqrt{54}$, $\sqrt{1050}$, $\sqrt{44}$, $\sqrt[3]{1728}$
- c. $\sqrt{18}$, $\sqrt{210}$, $\sqrt{22}$, $\sqrt[3]{108}$
- d. $\sqrt{18}$, $\sqrt{67}$, $\sqrt{15}$, $\sqrt[3]{91}$

44. Which is the simplest form of $3\sqrt{7} + 4\sqrt{7} - 9\sqrt{7} + 12\sqrt{7}$?

- a. $-14\sqrt{7}$
- b. $4\sqrt{7}$
- c. $10\sqrt{7}$
- d. $28\sqrt{7}$

45. Which is the simplest form of $-\sqrt{54} - \sqrt{6} - \sqrt{96}$?
- $2\sqrt{6}$
 - $-2\sqrt{6}$
 - $-8\sqrt{6}$
 - $-26\sqrt{6}$
46. Which is the simplest form of $\sqrt{12} - \sqrt{48} + \sqrt{147}$?
- $5\sqrt{3}$
 - $-6\sqrt{3}$
 - $6\sqrt{13}$
 - $13\sqrt{3}$
47. Which expression is the simplest form of $\sqrt{3} \cdot \sqrt{21}$?
- $\sqrt{3} \cdot 7\sqrt{3}$
 - 7.9
 - $\sqrt{63}$
 - $3\sqrt{7}$
48. Which expressions are equivalent to $4\sqrt{6} \cdot \sqrt{45}$ in simplest form and entire form?
- $36\sqrt{5}, \sqrt{6480}$
 - $12\sqrt{30}, \sqrt{4320}$
 - $2\sqrt{270}, \sqrt{4320}$
 - $6\sqrt{180}, \sqrt{6480}$
49. Which expressions are equivalent to $\sqrt{32} \cdot 2\sqrt{6}$ in simplest form and entire form?
- $4\sqrt{48}, \sqrt{384}$
 - $2\sqrt{192}, \sqrt{768}$
 - $16\sqrt{6}, \sqrt{768}$
 - $8\sqrt{6}, \sqrt{384}$

50. Which expression is the rationalized form of $\frac{-\sqrt{2}}{3\sqrt{54}}$?

a. $\frac{-27}{\sqrt{3}}$

b. $\frac{-1}{9\sqrt{3}}$

c. $\frac{-\sqrt{6}}{54}$

d. $\frac{-\sqrt{3}}{27}$

51. Which restrictions apply to the variable in $\sqrt{15x^3}$?

I. $|x| \neq 0$ **II.** $x \geq 0$ **III.** $x > 0$ **IV.** $x \in \mathbb{R}$ **V.** $x \in \mathbb{N}$

a. I, IV, and V

b. II and IV

c. I and IV

d. III and V

52. Which restrictions apply to the variable in $\sqrt{(x-9)^5}$?

I. $|x| \neq 9$ **II.** $x+9 \geq 0$ **III.** $x \geq 9$ **IV.** $x \in \mathbb{N}$ **V.** $x \in \mathbb{R}$

a. II and V

b. I, III, and IV

c. III and V

d. I, II, and V

53. What is the value of x in $6\sqrt{x} = 18$?

a. 12

b. 54

c. $\sqrt{3}$

d. 9

54. What is the value of x in $\sqrt{\frac{17-x}{2}} = 3$?

a. 1

b. -11

c. 11

d. -1

55. What is the value of x in $\sqrt[3]{2x} = 2$?
- 8
 - 2
 - 4
 - 1

Unit 5 – Statistics

56. Determine the range of the following test scores.

History Test 1 Scores (out of 100)

90	84	77	66
89	84	77	65
86	82	75	65
86	81	72	61
84	79	70	56

- 34
 - 56
 - 90
 - 78
57. Determine the mean of the following test scores.

History Test 2 Scores (out of 100)

95	85	72	62
92	84	72	59
89	80	70	52
88	78	68	40
85	73	67	32

- 71.65
- 71.15
- 72.15
- 70.65

58. Environment Canada compiled data on the number of lightning strikes per square kilometre in Alberta and British Columbia towns from 1999 to 2008.

0.42 0.04 0.81 0.40 0.03 0.74
 0.28 0.03 0.70 0.23 0.03 0.66
 0.13 0.02 0.61 0.12 0.01 0.58
 0.10 0.00 0.49 0.07 1.08 0.43
 0.05 0.91 0.42 0.04 0.88

What value goes in the fourth row of this frequency table?

Lightning Strikes (per square kilometre)	Frequency
0.00–0.19	13
0.20–0.39	2
0.40–0.59	6
0.60–0.79	
0.80–0.99	3
1.00–1.19	1

- a. 5
 b. 4
 c. 6
 d. 3
59. Environment Canada compiled data on the number of lightning strikes per square kilometre in Alberta and British Columbia towns from 1999 to 2008.

0.42 0.04 0.81 0.40 0.03 0.74
 0.28 0.03 0.70 0.23 0.03 0.66
 0.13 0.02 0.61 0.12 0.01 0.58
 0.10 0.00 0.49 0.07 1.08 0.43
 0.05 0.91 0.42 0.04 0.88

Which range of data occurs most frequently?

- a. 0.30–0.39
 b. 0.00–0.09
 c. 0.10–0.19
 d. 0.20–0.29
60. At the end of a bowling tournament, three friends analyzed their scores.
 Erinn's mean bowling score is 92 with a standard deviation of 14.
 Declan's mean bowling score is 130 with a standard deviation of 18.
 Matt's mean bowling score is 116 with a standard deviation of 22.

Who is the more consistent bowler?

- a. Declan
 b. Erinn
 c. Impossible to tell.
 d. Matt

61. A pear orchard has 20 trees with these heights, given in inches.

110	83	104	95
88	80	115	106
97	100	98	93
92	117	75	83
122	115	89	105

Determine the standard deviation, to one decimal place.

- 15.0 in.
 - 11.0 in.
 - 9.0 in.
 - 13.0 in.
62. A company measured the lifespan of a random sample of 30 light bulbs. Times are in hours.

985	1001	1024	1087	952
910	938	931	1074	1081
1078	1080	982	1108	1022
937	922	1017	1093	1115
880	1048	917	1086	935
936	986	1038	954	966

Determine the mean, to one decimal place.

- 1012.8 h
 - 1007.8 h
 - 1002.8 h
 - 997.8 h
63. Jayma recorded the time it takes her to get to school using three different routes.

Hour	1	2	3	4	5
Route 1 (min)	12	8	11	12	8
Route 2 (min)	14	9	12	12	10
Route 3 (min)	6	14	10	9	11

On which route does Jayma have a more consistent travel time?

- Route 2
 - Route 3
 - Route 1
64. A set of data is normally distributed. What percent of the data is within one standard deviation of the mean?
- about 95%
 - about 68%
 - 100%
 - about 50%

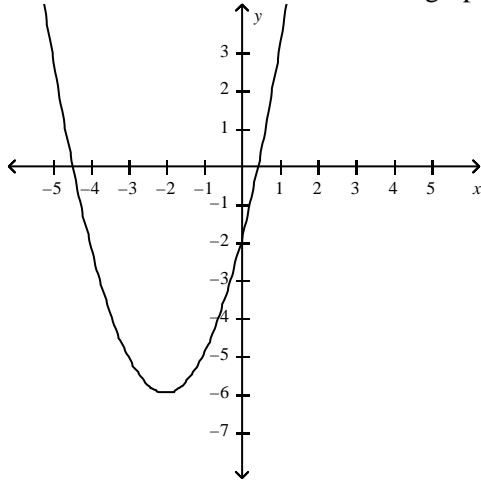
65. A set of data is normally distributed. What percent of the data is greater than the mean?
- 100%
 - about 95%
 - about 50%
 - about 68%
66. The ages of participants in a bonspiel are normally distributed, with a mean of 40 and a standard deviation of 10 years. What percent of the curlers are older than 60?
- 1.25%
 - 5%
 - 0%
 - 2.5%
67. Determine the z -score for the given value.
 $\mu = 184, \sigma = 8.6, x = 174$
- 1.16
 - 0.86
 - 1.16
 - 0.86
68. A poll was conducted about an upcoming election. The result that 44% of people intend to vote for one of the candidates is considered accurate within ± 2.7 percent points, 19 times out of 20. State the confidence interval.
- 41.3%–46.7%
 - 42.65%–45.35%
 - 44%–46.7%
 - 41.3%–44%
69. The results of a survey have a confidence interval of 56.0% to 64.6%, 9 times out of 10. Determine the margin of error.
- $\pm 64.6\%$
 - $\pm 16.6\%$
 - $\pm 8.3\%$
 - $\pm 56.0\%$
70. In a recent survey of high school students, 42% of those surveyed said that the food in the cafeteria was overpriced. The survey is considered accurate to within 6 percent points, 19 times out of 20. If a high school has 1000 students, state the range of the number of students who would agree with the survey.
- 520–640
 - 360–420
 - 420–480
 - 360–480

Unit 7 – Quadratic Functions

71. Which parabola opens upward?

- a. $y = 2x - 4x^2 - 5$
- b. $y = 4 - 2x^2 - 5x$
- c. $y = 2 + 4x - 5x^2$
- d. $y = -5x + 4x^2 + 2$

72. Which set of data is correct for this graph?



Set	Axis of Symmetry	Vertex	Domain	Range
A.	$x = -2$	$(-2, 6)$	$x \in \mathbf{R}$	$y \in \mathbf{R}$
B.	$x = -6$	$(-6, -2)$	$-8 \leq x \leq 4$	$-8 \leq y$
C.	$x = -2$	$(-2, -6)$	$x \in \mathbf{R}$	$-6 \leq y$
D.	$x = 2$	$(2, 6)$	$-6 \leq x \leq 2$	$-6 \leq y$

- a. Set A.
- b. Set C.
- c. Set B.
- d. Set D.

73. What are the x - and y -intercepts for the function $f(x) = x^2 - 2x - 8$?

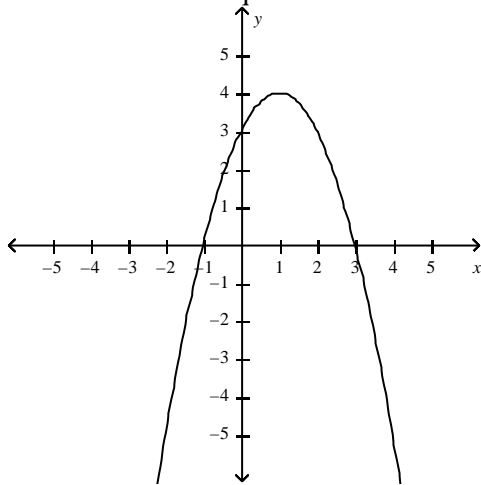
- a. no x -intercepts, $y = -8$
- b. $x = -2, x = 4, y = -8$
- c. $x = -2, x = 2, y = -8$
- d. $x = -4, x = 4, y = -8$

74. What are the x - and y -intercepts for the function $f(x) = x^2 + 7x + 10$?

- a. $x = 10, y = -2$
- b. no x -intercepts, $y = -2$
- c. $x = -5, x = -2, y = 10$
- d. $x = -5, x = 5, \text{no } y\text{-intercept}$

75. The points $(-2, 4)$ and $(1, 4)$ are located on the same parabola. What is the equation for the axis of symmetry for this parabola?
- $x = -1.5$
 - $x = 0.5$
 - $x = -0.5$
 - $x = -1$

76. What is the correct quadratic function for this parabola?



- $f(x) = (x + 1)(x + 3)$
 - $f(x) = (1 - x)(3 - x)$
 - $f(x) = (x - 1)(x + 3)$
 - $f(x) = -(x + 1)(x - 3)$
77. Which set of data is correct for the quadratic relation $f(x) = -3(x + 2)(x - 3)$?

	x-intercepts	y-intercept	Axis of Symmetry	Vertex
A.	$(2, 0), (3, 0)$	$y = -18$	$x = 2.5$	$(2.5, 6.75)$
B.	$(-2, 0), (3, 0)$	$y = -18$	$x = -0.5$	$(-0.5, 15.75)$
C.	$(2, 0), (-3, 0)$	$y = 18$	$x = -0.5$	$(-0.5, 15.75)$
D.	$(-2, 0), (3, 0)$	$y = 18$	$x = 0.5$	$(0.5, 18.75)$

- Set D.
- Set A.
- Set B.
- Set C.

78. Which set of data is correct for the quadratic relation $f(x) = (x + 45)^2 + 60$?

	Direction parabola opens	Vertex	Axis of Symmetry
A.	upward	$(-60, -45)$	$x = -60$
B.	downward	$(60, 45)$	$x = 60$
C.	upward	$(-45, 60)$	$x = -45$
D.	downward	$(45, 60)$	$x = 45$

- Set C.
- Set D.
- Set A.
- Set B.

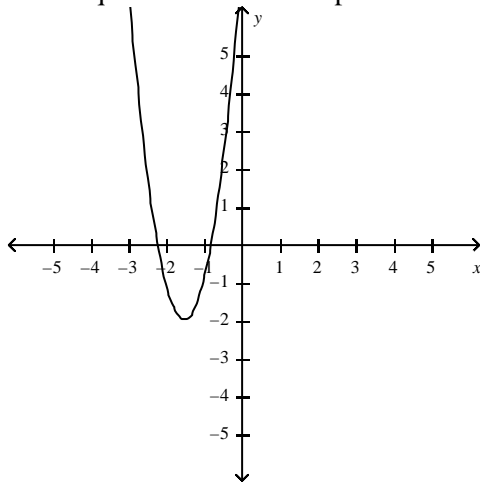
79. Which function has a maximum value?

- $f(x) = -3(x - 12)^2 + 5$
- $f(x) = 2(x - 15)^2 - 3$
- $f(x) = (x - 13)^2 + 12$
- $f(x) = 1.2(x + 3)^2 + 1.5$

80. How many zeros does $f(x) = a(x - 5)^2$ have if $a < 0$?

- It is impossible to determine.
- 1
- 0
- 2

81. Which quadratic function represents this parabola?



- $f(x) = 4(x + 1.5)^2 - 2$
- $f(x) = -4(x + 1.5)^2 + 2$
- $f(x) = 4(x + 1.5)^2 + 2$
- $f(x) = 4(x - 1.5)^2 - 2$

82. Which quadratic function does not have $a = 2$ and vertex $(-3, -8)$?

- a. $y = (2x + 2)(x + 5)$
- b. $y = 2x^2 + 8x + 12$
- c. $y = 2(x + 3)^2 - 8$
- d. $y = 2(x + 5)(x + 1)$

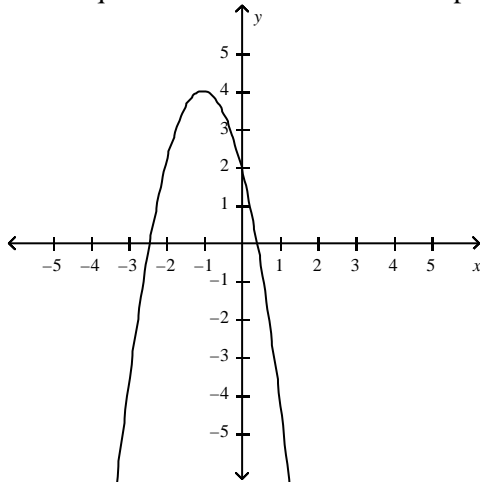
83. Which quadratic function does not have vertex $(2, -8)$ and does not pass through $(4, -6)$?

- a. $y = (0.5x + 1)(x - 6)$
- b. $y = 0.5(x - 6)(x + 2)$
- c. $y = 0.5(x - 2)^2 - 8$
- d. $y = 0.5x^2 + 2x - 6$

84. Which equation represents the quadratic function $y = 0.5(x + 4)(x - 3)$ in standard form?

- a. $y = 0.5x^2 + 0.5x - 6$
- b. $y = 0.5x^2 - 3.5x + 6$
- c. $y = 0.5x^2 - 0.5x - 6$
- d. $y = 0.5x^2 + 3.5x + 6$

85. Which quadratic function defines this parabola in vertex form?



- a. $y = -(x + 2)^2 + 5$
- b. $y = (-2x + 0.5)^2 + 2$
- c. $y = -2(x - 1)^2 + 3$
- d. $y = -2(x + 1)^2 + 4$

86. Solve $x^2 + 5x = -6$ by graphing the expressions on both sides of the equation.

- a. $x = 2, x = -3$
- b. $x = -2, x = -3$
- c. $x = -2, x = 3$
- d. $x = 2, x = 3$

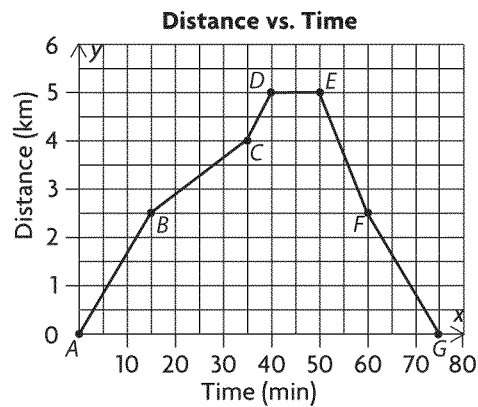
Unit 8 – Quadratic Equations

87. Rewrite $x^2 + x = -x + 3$ in standard form. Then solve the equation in standard form by graphing.
- $x = -3, x = 1$
 - $x = 3, x = 1$
 - $x = -3, x = -3$
 - $x = 3, x = -1$
88. Rewrite $x^2 + 2x = -3x^2 + 2x + 36$ in standard form. Then solve the equation in standard form by graphing.
- $x = 6, x = 6$
 - $x = 3, x = 3$
 - $x = 6, x = -6$
 - $x = 3, x = -3$
89. Rewrite $-8p^2 - 4p = -23p^2 + 4p - 1$ in standard form. Then solve the equation in standard form by graphing.
- $p = 3, p = 5$
 - $p = 0.333, p = 5$
 - $p = 0.333, p = 0.2$
 - $p = -0.333, p = 0.2$
90. Solve $m^2 - 10m + 16 = 0$ by factoring.
- $m = -4, m = -4$
 - $m = -8, m = -2$
 - $m = 8, m = 2$
 - $m = 4, m = 4$
91. Solve $4p^2 + 15p = -9$ by factoring.
- $p = -\frac{3}{4}, p = -3$
 - $p = 4, p = 3$
 - $p = -4, p = 3$
 - $p = -\frac{3}{4}, p = 3$
92. Solve $3y^2 - 12y = -2y^2 + 5y + 12$ by factoring.
- $y = -5, y = 4$
 - $y = -\frac{3}{5}, y = 4$
 - $y = -\frac{5}{3}, y = 4$
 - $y = -3, y = 4$

93. Solve $9w^2 + 6w + 1 = 0$ using the quadratic formula.
- $w = 0, w = \frac{1}{3}$
 - $w = -\frac{1}{3}$
 - $w = 0, w = -\frac{1}{3}$
 - $w = \frac{1}{3}$
94. Solve $2z^2 = 3 - 8z$ using the quadratic formula.
- $z = 2 + \frac{\sqrt{43}}{2}, z = 2 - \frac{\sqrt{43}}{2}$
 - $z = 2 + \frac{\sqrt{36}}{4}, z = 2 - \frac{\sqrt{36}}{4}$
 - $z = -2 + \frac{\sqrt{43}}{2}, z = -2 - \frac{\sqrt{43}}{2}$
 - $z = -2 + \frac{\sqrt{36}}{4}, z = -2 - \frac{\sqrt{36}}{4}$
95. Ben dives off a 7 m platform. He reaches a maximum height of 7.3 m after 0.27 s. How long does it take him to reach the water?
- 1.40 s
 - 1.60 s
 - 1.45 s
 - 1.55 s
96. A company manufactures cylindrical planters. A town council wants planters with a wide rim for people to sit on. The company suggests that the area of the soil in the planter be about equal to the area of the rim. If the outer radius of the planter is 8.0 m, what is the radius of the soil?
- 2.3 m
 - 5.7 m
 - 4.9 m
 - 6.1 m
97. A hockey arena sells premium tickets for \$70. At this price, the arena will sell 150 premium tickets every game. The owners know from past years that they will sell 3 fewer premium tickets per game for each price increase of \$2. What should the owners charge for a premium ticket to earn the maximum amount of money?
- \$90
 - \$105
 - \$86
 - \$75

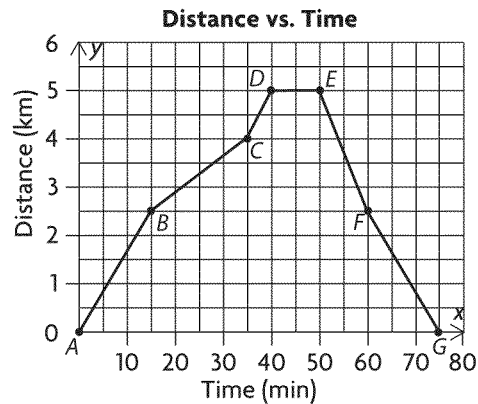
Unit 1 – Measurement

98. A 2 L carton of milk costs \$3.26. What is the unit rate?
- \$0.83/500 mL
 - \$3.27/2 L**
 - \$0.61/L
 - \$1.63/L
99. Maureen ran 15 km in 1.25 h. What is her running speed?
- 12 km/h
 - 15 km/h
 - 120 m/min
 - 200 m/s
100. Which factors would not affect your decision to buy electronics in the U.S. rather than in Canada?
- distance from Canada/U.S. border, merchandise prices, shipping method
 - duty, merchandise availability, gas prices
 - payment method, merchandise colour, exchange policy
 - budget, time of year, exchange rate
101. The graph shows how a cyclist travels over time.
Over which interval is the cyclist travelling at 0 km/h?



- AB
- BC
- DE
- FG

102. The graph shows how a cyclist travels over time.
Over which interval is the cyclist travelling at 12 km/h?



- a. AB
b. BC
c. CD
d. FG
103. Which situations could be described using the rates \$15.56/lb, 80 km/h, and \$1.58/L?
- a. price of nails, average human running speed, price of sunflower oil
b. price of coffee, cruising speed of an airplane, price of milk
c. price of lobster, highway speed limit, price of apple juice
d. price of crude oil, average speed of a truck, price of cola
104. Cashews cost \$8.72 for 350 g. Peanuts cost \$19.80 for 2 kg.
Jack buys 750 g of cashews. Which equation determines the number of kilograms of peanuts, A, Jack could buy for the same cost?

- a. $A = \left(\frac{750 \text{ g} \cdot \$8.72}{350 \text{ g}} \right) \left(\frac{2 \text{ kg}}{\$19.80} \right)$
- b. $A = \left(\frac{750 \text{ g} \cdot \$8.72}{350 \text{ g}} \right) \left(\frac{\$19.80}{2 \text{ kg}} \right)$
- c. $A = \left(\frac{\$19.80}{2 \text{ kg}} \right) \left(\frac{750 \text{ g}}{350 \text{ g} \cdot \$8.72} \right)$
- d. $A = \left(\frac{350 \text{ g} \cdot \$8.72}{750 \text{ g}} \right) \left(\frac{2 \text{ kg}}{\$19.80} \right)$

105. Lucas drove 116 km in 1 h 45 min and used 14 L of fuel. Which equation determines his average fuel consumption, C , in litres per 100 km?

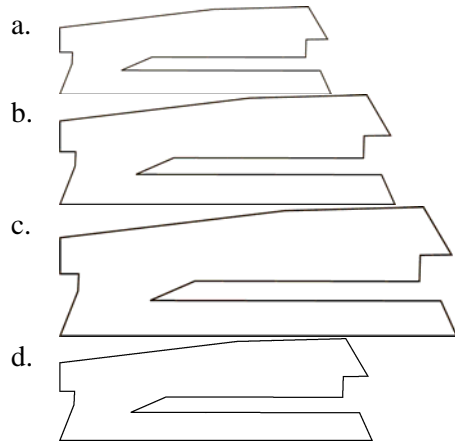
a. $C = \left(\frac{116 \text{ km}}{1.75 \text{ h}} \right) (14 \text{ L})$

b. $C = \frac{116 \text{ km} \cdot 14 \text{ L}}{100 \text{ km}}$

c. $C = (1.75 \text{ h}) \left(\frac{14 \text{ L}}{116 \text{ km}} \right)$

d. $C = \left(\frac{14 \text{ L}}{116 \text{ km}} \right) (100)$

106. The original stapler for these scale diagrams was 18 cm long. Which diagram was drawn using a scale factor of 30%?



107. A photograph is 6 cm by 11 cm. A copy is made using a scale factor of 140%. What are the dimensions of the copy?

- a. 4.3 cm by 7.9 cm
 b. 8.4 cm by 15.4 cm
 c. 24 cm by 44 cm
 d. 43 mm by 79 cm

108. Data for triangle ABC is shown on the first line of the table.
Triangle ABC is enlarged so the area is 270 cm².
Which triangle is the enlargement of triangle ^{ABC}?

Triangle Name	Length of Base (cm)	Height of Triangle (cm)	Scale Factor	Area (cm ²)	$\frac{\text{Area of Scaled Triangle}}{\text{Area of Original Triangle}}$
ABC	5	3	1	7.5	1
DEF	30	18	6	270	36
GHI	30	18	36	270	6
JKL	36	16	6	270	36
MNO	18	30	6	270	6

- a. DEF
b. GHI
c. JKL
d. MNO
109. Which of the following boxes are similar to a gift box that is 10 cm by 8 cm by 16 cm?
- a. a box 20 cm by 19 cm by 30 cm
b. a box 6 cm by 4 cm by 8 cm
c. a box 15 cm by 13 cm by 21 cm
d. none of the above
110. Which of the following saucepans are similar to a saucepan that is 9 cm deep, 16 cm in diameter, and has a handle 20 cm long?
- a. a saucepan 18 cm deep, 26 cm in diameter, and with a 40 cm handle
b. a saucepan 12 cm deep, 21.3 cm in diameter, and with a 26.7 cm handle
c. a saucepan 5 cm deep, 8 cm in diameter, and with an 11.5 cm handle
d. none of the above
111. A 1:7 scale model of a shopping cart is 15 cm tall, 8.4 cm wide, and 13.4 cm long. What are the dimensions of the actual shopping cart?
- a. 95 cm by 40 cm by 45 cm
b. 105 cm by 58.8 cm by 93.8 cm
c. 150 cm by 160 cm by 195 cm
d. 1 m by 0.6 m by 1 m

112. Cylinder A has a radius of 5 mm and a height of 30 mm. Cylinder B has a radius of 20 mm and a height of 120 mm.
These two cylinders are similar. By what factor is the surface area of cylinder B greater than the surface area of cylinder A?
- 36
 - 4
 - 6
 - 16
113. Rectangle A is 6 cm high, 9 cm long, and 15 cm wide. Rectangle B is 14 cm high, 21 cm long, and 35 cm wide. These two rectangles are similar. By what factor is the surface area of rectangle B greater than the surface area of rectangle A?
- $\frac{49}{81}$
 - $\frac{49}{9}$
 - $\frac{3}{7}$
 - $4\frac{1}{3}$
114. A cylindrical oil tank has a surface area of 1800 m^2 . A similar oil tank has dimensions that are reduced by a scale factor of $\frac{2}{3}$. What is the surface area of the smaller tank?
- 800 m^2
 - 630 m^2
 - 1200 m^2
 - 533 m^2
115. A shipping container in the shape of rectangular prism has a surface area of 8 m^2 . A similar shipping container has dimensions that are increased by a scale factor of 2. What is the surface area of the larger shipping container?
- 2 m^2
 - 250 m^2
 - 32 m^2
 - 40 m^2
116. A large city map book will be changed so that it can be used as a street guide. To maintain the same number of pages, the page dimensions will be halved and the maps will be less detailed. The same type of paper will be used for the smaller map book. By what factor will the volume of the paper change?
- $\frac{1}{4}$
 - $\frac{1}{2}$
 - $\frac{1}{16}$

d. $\frac{1}{8}$

Final Exam Review
Answer Section

1. B
2. A
3. C
4. A
5. D
6. C
7. C
8. A
9. B
10. C
11. A
12. B
13. B
14. B
15. C
16. D
17. D
18. B
19. A
20. D
21. D
22. C
23. A
24. B
25. C
26. D
27. B
28. C
29. A
30. C
31. C
32. D
33. D
34. D
35. A
36. A
37. D
38. A
39. A
40. D
41. B
42. C
43. B
44. C

45. C
46. A
47. D
48. B
49. B
50. D
51. B
52. C
53. B
54. D
55. C
56. A
57. C
58. B
59. B
60. B
61. D
62. C
63. A
64. B
65. C
66. D
67. C
68. A
69. C
70. D
71. D
72. B
73. B
74. C
75. C
76. D
77. A
78. A
79. A
80. B
81. A
82. B
83. D
84. A
85. D
86. D
87. A
88. D
89. C
90. B

- 91. A
- 92. B
- 93. B
- 94. D
- 95. B
- 96. B
- 97. C
- 98. D
- 99. A
- 100. C
- 101. C
- 102. C
- 103. C
- 104. A
- 105. D
- 106. C
- 107. B
- 108. A
- 109. D
- 110. B
- 111. B
- 112. D
- 113. B
- 114. A
- 115. C
- 116. A