$\qquad$
$\qquad$
$\qquad$

## Math 9: Final Exam Review

## Short Answer

1. Determine the value of $\sqrt{0.16}$.
2. Name the two whole numbers whose squares are closest to 22.5 .

3 . Which decimal has a square root between 14 and 15 ?
i) 240.3
ii) 169
iii) 14.5
iv) 204.5
4. Determine the value of $\sqrt{77.2}$, to the nearest tenth.
5. Estimate the value of $\sqrt{0.15}$, to the nearest tenth.
6. Estimate the value of $\sqrt{\frac{5}{11}}$, to the nearest tenth.
7. This object is made from 9 centimetre cubes. Determine its surface area.

8. This object is composed of a right triangular prism on top of a right rectangular prism. Determine the surface area of the object.

9. Which power is positive?
i) $(6)^{5}$
ii) $(-6)^{5}$
iii) $-(6)^{5}$
iv) $-(-6)^{5}$
10. A $4-\mathrm{cm}$ cube is attached to the top of a right triangular prism as shown.

Determine the surface area of the composite object, to the nearest square centimetre.

11. Write $(5)(5)(5)(5)(5)(5)(5)(5)$ as a power.
12. Evaluate: $(-13)^{0}$
13. Evaluate: $-\left(10^{0}\right)^{9}$
14. State which operation you would do first to evaluate $8+9 \times 6^{2}-5$.
15. Evaluate: $\left(5^{3}-4^{2}\right)^{0}-\left(6^{2}-8^{0}\right)$
16. Write $[(-7) \times 3]^{4}$ as a product of powers.
17. Identify the number that is NOT equal to the other three numbers.
$\frac{-5}{8}, \frac{5}{-8}, \frac{-5}{-8},-\frac{5}{8}$
18. Simplify. $-\frac{3}{4}-\left(-\frac{7}{8}\right)$
19. Simplify. $-1 \frac{2}{3}-(-5)$
20. Determine this difference.
$8.54-(-3.76)$
21. Determine this difference.
$-4 \frac{2}{3}-2 \frac{1}{2}$
22. Determine this quotient.
$(-2.8) \div 4$
23. Evaluate.
$\frac{2 \times 5-3}{4+3 \times 5}$
24. The formula $F=\frac{9}{5} \times C+32$ can be used to convert Celsius temperature to Fahrenheit. Convert $-20^{\circ} \mathrm{C}$ to Fahrenheit.
25. 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 $A=T-95 w$, 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.
26. Describe the graph of the equation $x+7=0$.
27. Which graph on this grid has the equation $x=9$ ?

28. Which equation describes the graph below?
i) $y=2 x$
ii) $y=2 x+2$
iii) $y=-x+2$
iv) $y=-2 x+2$

29. This graph represents a linear relation.

Determine the value of $x$ when $y=-2$.

30. From the list, which terms are like $5 x$ ? $5 x^{2}, 4 x, 3,-8 x,-5 x, 9 x^{2}, 5$
31. Simplify: $10 x^{2}-8+3 x+5-6 x^{2}-6 x$
32. Add: $(7 x-5)+(3 x+9)$
33. Write the perimeter of this triangle as a polynomial in simplest form.

34. Subtract: $(2 p-3)-(3-2 p)$
35. Subtract: $\left(3-2 c-6 c^{2}\right)-(5 c-3)$
36. Divide: $12 x^{2} \div 3$
37. Multiply: $(-2)\left(4 c^{2}-6 c-7\right)$
38. Divide: $\frac{-12 y^{2}-6 y-9}{-3}$
39. Multiply: $(5 y-7)(-y)$
40. Multiply: $(-q)(6 p-7 q)$
41. Solve: $6 x-9=3$
42. Solve: $4 x+2.8=7.2$
43. Solve: $8=5+\frac{x}{3}$
44. Solve: $\frac{x}{7}-3=5$
45. Solve: $5=\frac{35}{w}, w \neq 0$
46. Which of these graphs represent the solution of the inequality $q-2 \leq 0$ ?
i)

ii)

iii)

iv)

47. Which of these numbers is a solution of the inequality $h+7 \geq 0$ ?

7, $-7,-6,-8$
48. Solve: $12 t-8<16+13 t$
49. Which of these graphs represent the solution of the inequality $5 x \geq-10$ ?
i)

ii)

iii)

iv)

50. Which inequality has its solution graphed on the number line below?
i) $2+3 x \geq 11$
ii) $3-3 x \geq 12$
iii) $5-3 x \leq 14$
iv) $5+3 x \leq 14$

51. Solve: $7+\frac{3}{4} x<10$
52. A drawing of a regular hexagon has side length 1.7 cm .

The hexagon is enlarged by a scale factor of 2.7 .
Determine the side length of the enlargement.
53. A circle has diameter 56 cm . The diameter of the reduction is 7 cm .

Determine the scale factor.
54. A wheel has diameter 60 cm .

Determine the diameter on a scale diagram if the scale factor is 0.07 .
55. Calculate the side length, in units, in this proportion: $\frac{P Q}{8}=\frac{5}{160}$
56. Calculate the value of $x$ in this proportion: $\frac{x}{4.5}=\frac{13.5}{18}$
57. When the shadow of a flagpole is 31.2 m long, a $1.6-\mathrm{m}$ fencepost casts a shadow 2.6 m long. How tall is the flagpole?
58. Determine the measure of $\angle \mathrm{KML}$ in this pair of similar triangles.

59. Which figure shows the rotation image of circle A after a $135^{\circ}$ counterclockwise rotation about its centre?

60. If this hexagon is rotated $90^{\circ}$ clockwise about point $A$, how many lines of symmetry will there be in the diagram formed by the hexagon and its image?

61. O is the centre of this circle.

Which line is a tangent?

62. $O$ is the centre of this circle and point Q is a point of tangency.

Determine the value of $x^{\circ}$.

63. O is the centre of this circle and point G is a point of tangency.

Determine the value of $a$. If necessary, give your answer to the nearest tenth.

64. O is the centre of this circle and point T is a point of tangency.

Determine the value of $n$. If necessary, give your answer to the nearest tenth.

65. A circle has radius 7 cm . Which of the following measures could NOT be the length of a chord in the circle: $2 \mathrm{~cm}, 11 \mathrm{~cm}, 14 \mathrm{~cm}$, or 17 cm ?
66. $O$ is the centre of the circle.

Determine the value of $n$ to the nearest tenth, if necessary.

67. O is the centre of the circle.

Determine the value of $f$ to the nearest tenth, if necessary.

68. O is the centre of the circle.

Determine the value of $x$ to the nearest tenth, if necessary.

69. Leila arrives at the airport 3 hours before her flight to Chicago because each of the past 4 times she has travelled to the USA, it took her over 1.5 h to get through check-in and security.
Is her decision based on theoretical probability, experimental probability, or subjective judgment?
70. In an anonymous survey, students were asked:
"Do you agree that everyone should become a vegetarian?"
In this survey, which of the following might be a problem?
i) Cultural sensitivity
ii) Ethics
iii) Privacy
iv) Use of Language
71. A newspaper company wants to make sure that the pages of its newspaper appear in the correct order. Which population is it interested in testing?
i) All newspapers printed
ii) Newspapers delivered to residences
iii) Newspapers sold at newspaper stands
iv) Newspapers delivered to businesses
72. A college wants to estimate the number of high school students who will enrol in September. Which data collection method would provide the most accurate information?
i) Survey a sample of grade 12 students from one local high school
ii) Survey a sample of grade 12 students from all the local high schools
iii) Survey all grade 12 students from the local high schools
iv) Survey all grade 12 students from one local high school
73. A fashion designer offered to teach a class on clothing design for students in grades 11 and 12. Which data collection method would provide the most accurate information about how likely students would be to take the class?
i) Survey a sample of grade 11 and 12 students
ii) Survey a sample of grade 11 and 12 girls
iii) Survey all grade 12 students
iv) Survey all grade 11 and 12 girls
74. For a science project, groups of grade 9 students each analysed a sample of water from a local stream. Group P collected samples every Monday morning before school.
Group Q collected samples at different times every Tuesday.
Group R collected samples before school on different days.
Group S collected samples at different times on different days
Which group will produce the most reliable information?
75. A mobile phone company wants to know if its customers would be willing to pay a higher monthly fee for a plan that would cover international calls to Europe. To gather data, they make a list of cell phone numbers that regularly make calls to Europe and use a computer program to randomly select numbers from this list to call and survey. Which sampling method did the company use?

## Math 9: Final Exam Review <br> Answer Section

## SHORT ANSWER

1. 0.4
2. 4,5
3. iv
4. 8.8
5. 0.4
6. 0.7
7. $30 \mathrm{~cm}^{2}$
8. $351 \mathrm{~cm}^{2}$
9. i and iv
10. $352 \mathrm{~cm}^{2}$
11. $5^{8}$
12. 1
13. -1
14. Square 6
15. -34
16. $(-7)^{4} \times 3^{4}$
17. $\frac{-5}{-8}$
18. iii
19. iii and iv
20. 4.78
21. $-7 \frac{1}{6}$
22. -0.7
23. $\frac{7}{19}$
24. $-4^{\circ} \mathrm{F}$
25. $\$ 63$
26. A vertical line that intersects the x -axis at -7 .
27. Graph S
28. iv
29. -0.5
30. $4 x,-8 x,-5 x$
31. $4 x^{2}-3 x-3$
32. $10 x+4$
33. $27 x-4$
34. $4 p-6$
35. $-6 c^{2}-7 c+6$
36. $4 x^{2}$
37. $-8 c^{2}+12 c+14$
38. $4 y^{2}+2 y+3$
39. $-5 y^{2}+7 y$
40. $-6 p q+7 q^{2}$
41. 2
42. 1.1
43. 9
44. 56
45. $w=7$
46. Graph iii
47. $7,-7,-6$
48. $t>-24$
49. Graph iii
50. iv
51. $x<4$
52. 4.59 cm
53. $\frac{1}{8}$
54. 4.2 cm
55. 0.25
56. 3.375
57. 19.2 m
58. $35^{\circ}$
59. Figure ii
60. 4
61. PR
62. $49^{\circ}$
63. 14.9
64. 40.4
65. 17 cm
66. 4.4
67. 8
68. 17
69. Experimental probability
70. iv
71. i
72. iii
73. i
74. Group S
75. Simple random sampling
