Don't review: (2018)

- STATistics / data Management
- Scientific Notation
- Probability

Mr. B ☺

Grade 8 Math Review

Name: _____

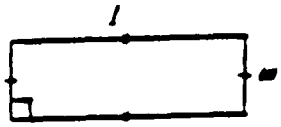
Class: _____

FORMULA SHEET

GRADE 8

Use $\pi = 3.14$.

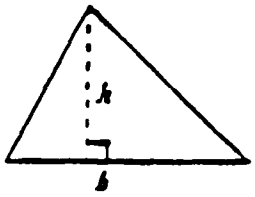
rectangle



$A = lw$

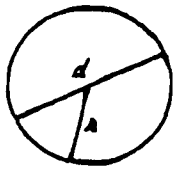
$P = 2l + 2w$

triangle



$A = \frac{1}{2}bh$

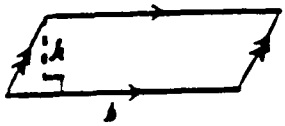
circle



$A = \pi r^2$

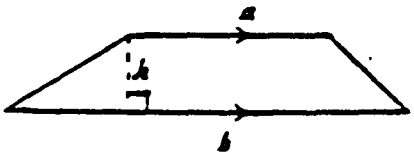
$C = 2\pi r \quad C = \pi d$

parallelogram



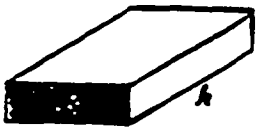
$A = bh$

trapezoid



$A = \frac{1}{2}(a+b)h$

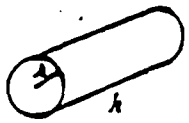
prism



$V = Bh$

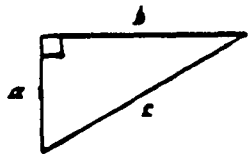
S.A. = total area of all fac

cylinder



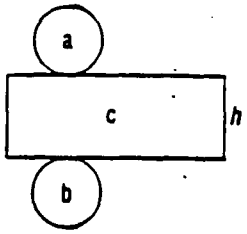
$V = \pi r^2 h$

Pythagorean Theorem:



$a^2 + b^2 = c^2$

Surface Area of a Cylinder

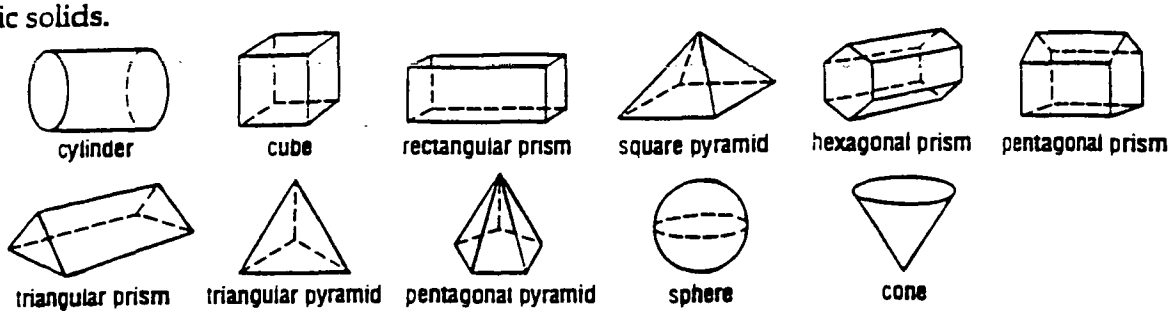


Surface area = areas of a + b + c

$= \pi r^2 + \pi r^2 + (\pi d \times h)$

Three-Dimensional Solids

There are many different three-dimensional shapes in a set of geometric solids.



A **polyhedron** is a three-dimensional figure with faces that are polygons.

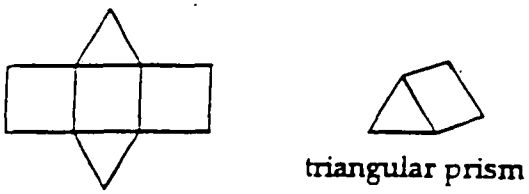
Solids, Shells, and Skeletons

A **solid** is a three-dimensional object whose interior is completely filled.
A **shell** is a three-dimensional object whose interior is empty.
A **skeleton** is a representation of the edges of a polyhedron.

In a polyhedron one face of the figure is called the **base.**
The line segment where two faces meet is called an **edge.**
The point at which edges of a polyhedron meet is called a **vertex.**

Nets of Three-Dimensional Shapes

A pattern that can be folded to form a polyhedron is called a **net.**



triangular prism

Polygons

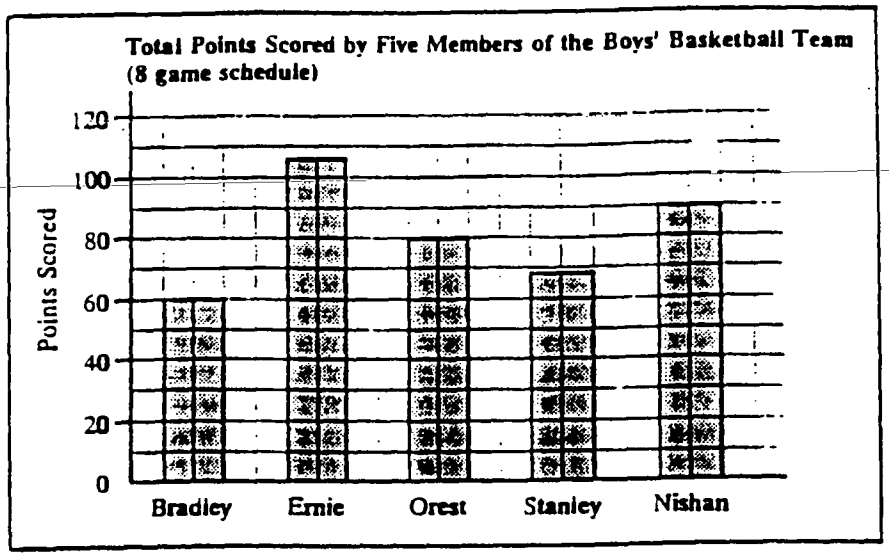
A **polygon** is a closed figure formed by 3 or more line segments.

A polygon is named according to its number of sides. In a **regular polygon,** all the sides are the same length and all the angles have the same measure.

The sum of the interior angles of a polygon with n sides is $180° \times (n - 2)$.

Statistics - Data Management

1. Use the bar graph to answer the questions below.



a) Who scored the least number of points?

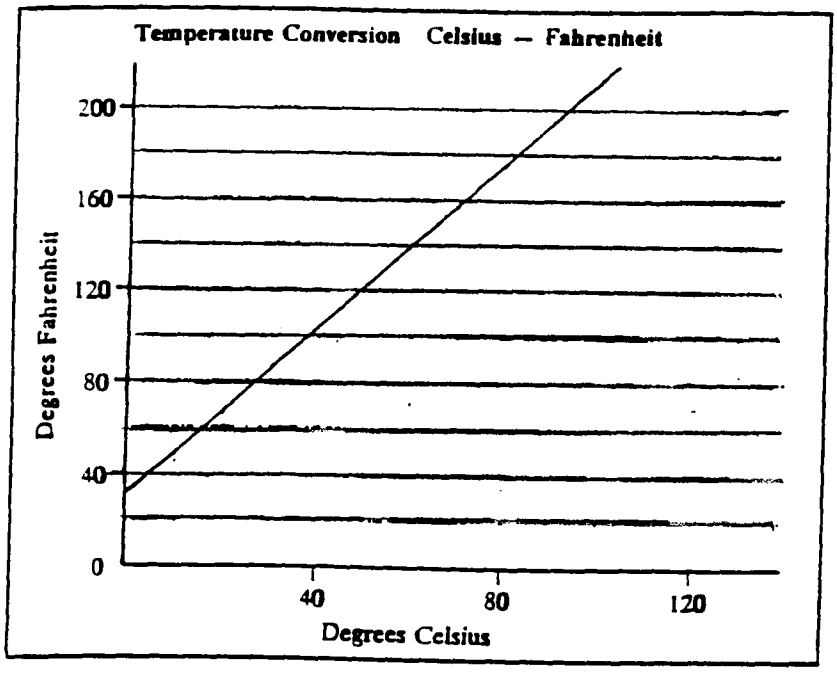
b) How many points did Ernie score?

c) How many more points did Nishan score than Bradley?

d) What was the total number of points scored by all five team members?

e) What percent of all total points did Nishan score?

2. The line graph below shows the relation between the readings on the Fahrenheit and the Celsius temperature scales. Answer the questions below using this graph.

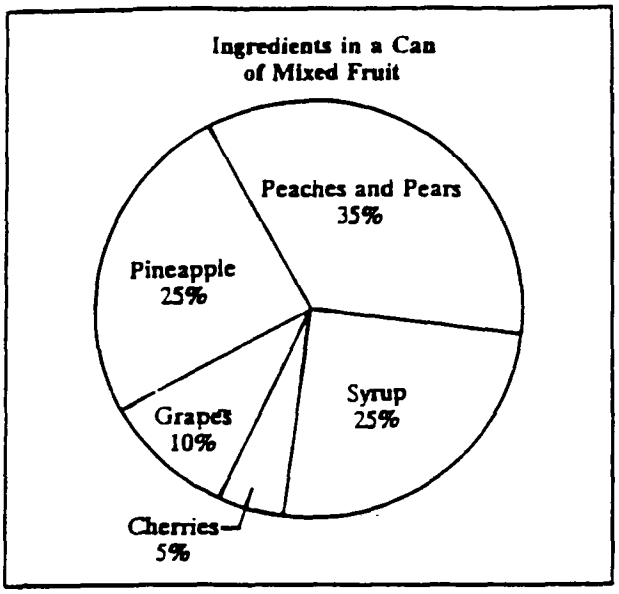


a) What is the Fahrenheit temperature reading when the Celsius scale is at:
i) 0°C? ii) 20°C? iii) 40°C? iv) 60°C?

b) What is the Celsius temperature reading when the Fahrenheit scale is at:
i) 80°F? ii) 32°F? iii) 140°F? iv) 212°F?

Statistics - Data Management

3. Use the circle graph indicating the ingredients in a can of mixed fruit to answer the questions below.

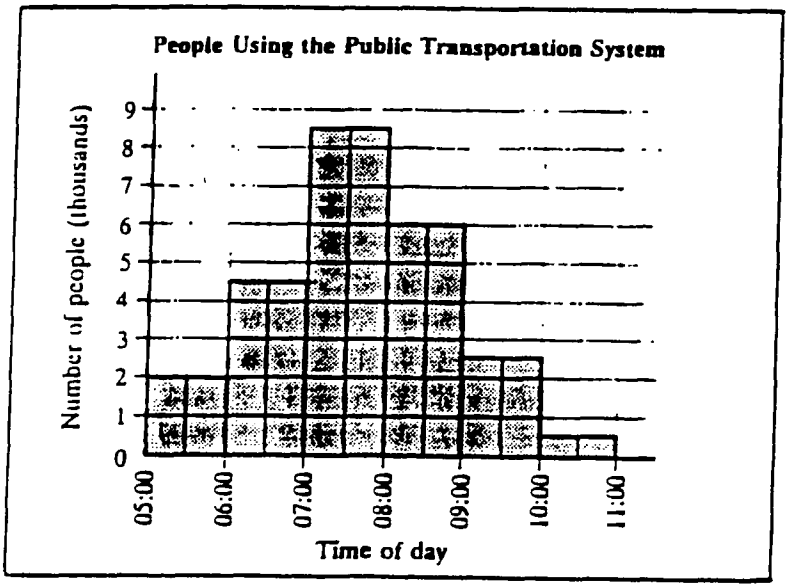


a) What percent do the pineapple, grapes, and cherries make?

b) What angle represents the peaches and pears?

c) If the can contains 480 mL of mixed fruit, how much of this is syrup?

4. The histogram below shows the number of people who use the public transportation system from 05:00 to 11:00 in a Canadian city. Use it to answer the questions below.

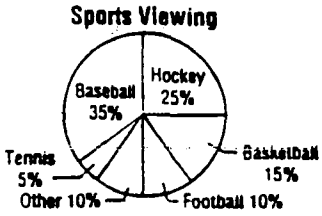


a) Between what two hours is the public transportation system the busiest?

b) What is the total number of people using the public transportation system between 06:00 and 10:00?

Statistics

1. The circle graph shows the results of a survey that asked students for their favourite sport to watch on television.



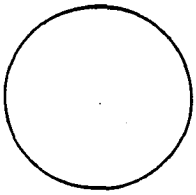
In a school population of 420 students, how many chose each sport?

a) Baseball _____ b) Hockey _____

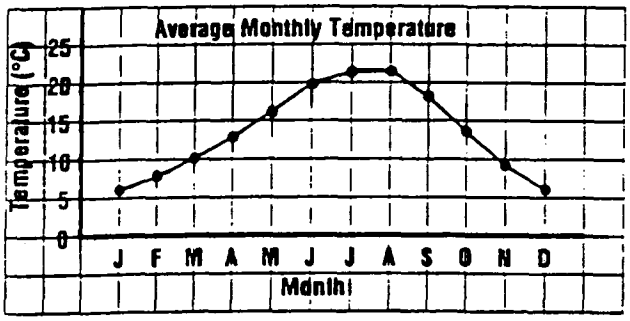
c) Football _____ d) Basketball _____

e) Tennis _____ f) Other _____

3. Jarrod spent last Saturday doing the following activities. Sleeping: 10 h, Eating: 2 h, Shopping: 2.5 h, Reading: 1.5 h, Watching TV: 3 h, Doing Homework: 2 h, Playing Outside: 3 h
Display these data on a circle graph.



5. The broken-line graph shows the average monthly temperature one year in Victoria, British Columbia.



a) What was the highest average temperature?

_____

b) What was the lowest average temperature?

_____

c) How much greater was the average temperature in July than the average temperature in October? _____

2. The list shows the heights, in centimetres, of the students in a grade 8 class.
157, 162, 159, 164, 157, 171, 173, 158, 181, 176, 154, 165, 152, 163, 174, 167, 157, 160, 150, 156, 173, 175, 162, 159, 161, 161

a) Construct a stem-and-leaf plot.

b) Find the median height. _____

c) What is the mode? _____

d) What is the range? _____

4. Find the mean, median, and mode of each set of values.

a) 119, 123, 107, 112, 99, 120, 107

Mean: _____ Median: _____

Mode: _____

b) 34, 41, 40, 38, 43, 40, 41, 34

Mean: _____ Median: _____

Mode: _____

c) 149, 206, 164, 158, 197, 191

Mean: _____ Median: _____

Mode: _____

Number Theory
Powers and Roots

Write each product in exponential form and in standard form.

1. $(5 \times 5) \times (5 \times 5)$

_____

2. $(4 \times 4 \times 4 \times 4) \times (4 \times 4 \times 4)$

_____

3. $(2 \times 2 \times 2) \times (2 \times 2 \times 2 \times 2 \times 2)$

_____

25. Find each root.

a) $\sqrt[3]{27}$ b) $\sqrt{3600}$ c) $\sqrt{3136}$

26. Choose the best estimate.

a) $\sqrt{184}$ 14, 15, 16

b) $\sqrt{303}$ 16, 17, 18

c) $\sqrt{125}$ 10.5, 11.1, 11.9

d) $\sqrt{95}$ 8.9, 9.1, 9.8

27. Circle the composite numbers.

17 16 3 9 21 39

28. Write the prime numbers between 30 and 80.

_____

29. *List all the factors of each number.*

a) 56 _____

b) 62 _____

30. Every 4th day the lunchroom students in one school have movie day. Every 15th day is pizza day. What is the first day that both events occur on the same day?

_____

Simplify. Write in exponential form.

4. $3^3 \times 3^6$ _____

5. $10^8 \div 10^3$ _____

6. $5^2 \times 5^2 \div 5^3$ _____

7. $7^6 \div 7 \times 7^3$ _____

8. $9^8 \div 9^2 \times 9$ _____

Find the value of ◆ in each expression.

9. $4^2 \times 4^{\blacklozenge} = 4^7$ _____ 10. $3^2 \times 3 = 3^{\blacklozenge}$ _____

11. $6^{\blacklozenge} \div 6 = 6^3$ _____ 12. $8^9 \div 8^{\blacklozenge} = 8^{\blacklozenge}$ _____

13. Express each as a decimal.

a) 10^0 b) 10^{-1} c) 10^{-6}

14. Express each as a power of ten.

a) 100 000 000 b) 0.01

c) 0.000 01 d) 0.000 000 1

Write the two whole numbers closest to each square root.

15. $\sqrt{34}$ _____

16. $\sqrt{72}$ _____

17. $\sqrt{110}$ _____

Evaluate to the nearest tenth.

18. $\sqrt{175}$ _____

19. $\sqrt{62}$ _____

20. $\sqrt{0.07}$ _____

Evaluate.

21. $6^2 + 4 \times (9 - 2)$ _____

22. $\dfrac{42}{3^2 + 15 \div 3}$ _____

23. $(0.1 + 3.9)^2 \div 8 - 1.2^2$ _____

Geometry

Use the diagram to write the following ratios in lowest terms.

A	A	A	A	B	B	B
C	C	C	C	C	B	B

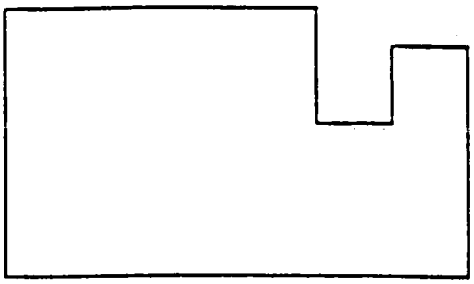
1. A to B _____

2. C to A _____

3. B to C _____

4. A to B to C _____

5.



a) Measure the dimensions of the diagram. Calculate the perimeter.

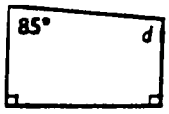
_____

b) The scale of the diagram is 1:200. Find the perimeter of the actual region.

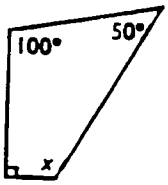
_____

6. Calculate the unknown angle.

a)



b)



Write each ratio in lowest terms.

7. 30:45 _____ 8. 63:27 _____

9. $\frac{15}{60}$ _____ 10. $\frac{84}{12}$ _____

11. 140 to 70 _____

12. a) Is every rhombus a parallelogram?
b) Is every parallelogram a rectangle?
c) Is every square a rhombus?
d) Is every kite a parallelogram?
e) Is every trapezoid a parallelogram?

13. *Find the missing value in each proportion.*

$\frac{\square}{7} = \frac{12}{21}$ $\quad \frac{6}{11} = \frac{42}{\square}$

$\frac{45}{72} = \frac{\square}{24}$ $\quad \frac{32}{96} = \frac{1}{\square}$

$24:\square = 6:5$ $\quad 2:9 = \square:45$

14. *Write each scale as a ratio in lowest terms.*

10 cm represents 1500 cm _____

1 cm represents 4 m _____

0.5 cm represents 1 m _____

1 cm represents 0.3 cm _____

1 cm represents 200 km _____

2 cm represents 500 km _____

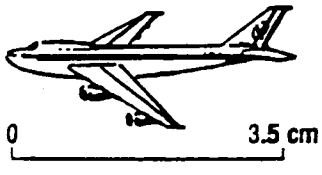
15. The scale drawing of an ant is 12 cm. The scale is 40:1. What is the actual length of the ant?

_____

16. The length of a Siberian tiger is 2.3 m. A scale diagram is drawn with a scale of 1:20. What is the length of the diagram?

_____

17.



The scale of the drawing is 1:1680. Find the actual length of the jumbo jet.

_____

Number Theory
Scientific Notation

Complete each of the following with the appropriate power of 10.

1. $600 = 6 \times$ _____
2. $1800 = 1.8 \times$ _____
3. $45\,000 = 4.5 \times$ _____
4. $270\,000 = 2.7 \times$ _____
5. $20\,700 = 2.07 \times$ _____
6. $60\,000 = 6 \times$ _____
7. $4\,200\,000 = 4.2 \times$ _____
8. $78\,000\,000 = 7.8 \times$ _____

Write in scientific notation.

9. 3200
10. 16 000
11. 720
12. 840 000
13. 2 100 000
14. 50 000
15. 73 000 000
16. 5100
17. 2 420 000
18. 801 000

Write in standard form.

19. 4.1×10^4
20. 1.8×10^2
21. 7×10^6
22. 5.75×10^4
23. 3.2×10^5
24. 6.8×10^6

Complete each of the following with the appropriate power of 10.

25. $0.007 = 7 \times$ _____
26. $0.04 = 4 \times$ _____
27. $0.000\,09 = 9 \times$ _____
28. $0.0032 = 3.2 \times$ _____
29. $0.0041 = 4.1 \times$ _____
30. $0.000\,006 = 6 \times$ _____

Write each of the following numbers in scientific notation.

31. 0.000 04
32. 0.035
33. 0.0007
34. 0.000 62
35. 0.000 078
36. 0.0054
37. 0.003
38. 0.000 68

Write each of the following numbers in standard form.

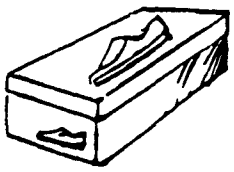
39. 6×10^{-2}
40. 1.6×10^{-4}
41. 7.2×10^{-5}
42. 8×10^{-6}
43. 3.02×10^{-3}
44. 6.2×10^{-7}
45. 5.18×10^{-6}
46. 4×10^{-5}

47. How many seconds away is this time next year? Express your answer in scientific notation.

Geometry

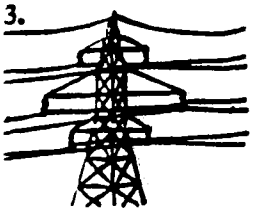
Identify each object as a solid, a shell, or a skeleton.

1.



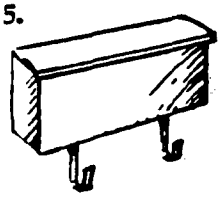
2.

3.

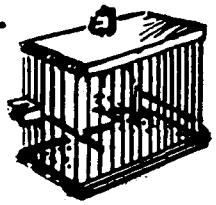


4.

5.



6.

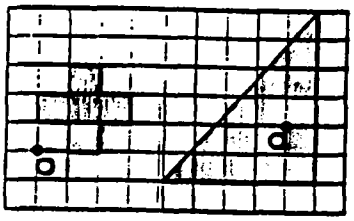


7. *Write the number of faces, edges, and vertices for each polyhedron.*

Polyhedron	*F*	*E*	*V*
rectangular prism			
pentagonal prism			
hexagonal pyramid			
cube			
triangular pyramid			

8. Copy each diagram on grid paper. Draw the image about the centre for the scale factor shown.

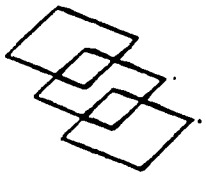
a) scale factor 4 b) scale factor $\frac{1}{3}$



9. Canada's longest river, the Mackenzie, is about 4200 km long. Its length measures 35 cm on a map. What's the map's scale?

10. Why do you not need ten different colors to color a ten-country map?

11. Are these networks traversable? a)



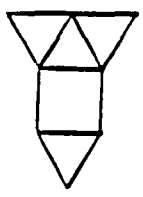
b)

12. a) Describe how a prism and a pyramid are different.

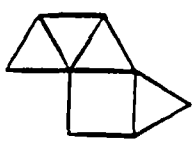
b) Describe how they are alike.

13. *Which one of each pair of nets can be formed into a polyhedron? Name the polyhedron.*

a)



b)



14. The circumference of a dime is 56.52 mm. Find the diameter.

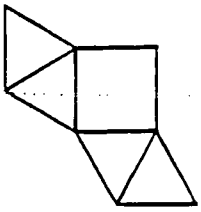
15. The largest tires ever manufactured measured 3.7 m in diameter. What was the circumference of each tire?

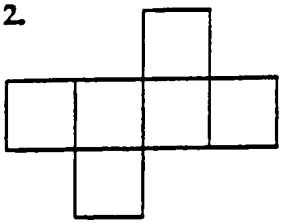
Calculate the volume.

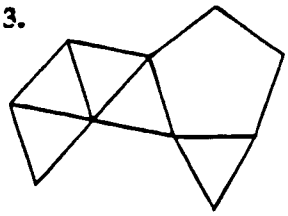
16.

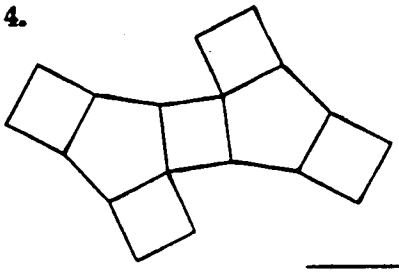
Geometry

Sketch and name the polyhedron formed by each net.

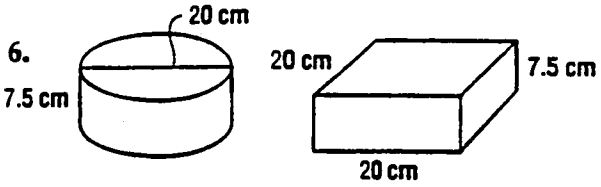
1. 

2. 

3. 

4. 

5. A double roll of wallpaper is 10 m long and about 52 cm wide. Calculate how many double rolls are needed to paper a wall 5.4 m by 2.4 m.

6. 

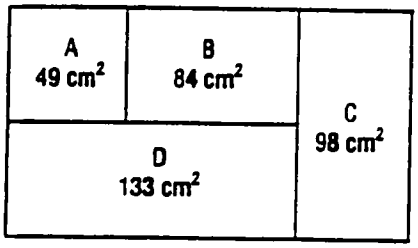
a) Which shape has the greater surface area?

b) By how much is it greater?

c) Which shape has the greater volume?

d) By how much is it greater?

7. a) The area of each part of a figure is shown. Part A is a square. Find the dimensions of B, C, and D.



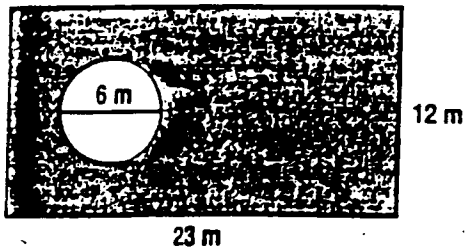
A: _____ B: _____

C: _____ D: _____

b) Find the dimensions and the area of the figure.

8. A baseball diamond is a square that measures 27.4 m on each side. Find the distance a player must run after hitting a home run.

9. Joseph wants to put a circular swimming pool in his backyard as shown. Find the area of grass remaining in the yard.



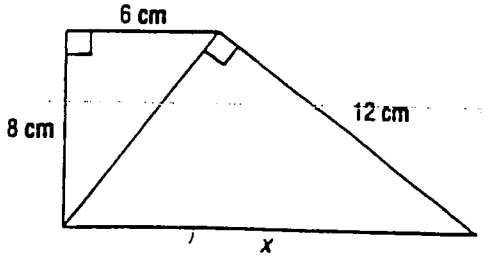
Geometry

1. A 12-m ladder is leaning against a wall. The foot of the ladder is 3 m from the base of the building. How far up the wall is the top of the ladder?

_____

2. Find x to the nearest tenth of a centimetre.

a)



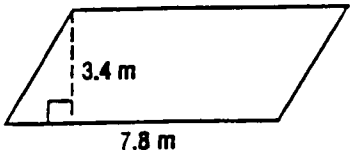
$x =$ _____

3. *Complete the table for each rectangle.*

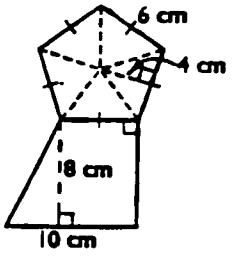
l	w	P
8	4	
3.6	4	
	8	36
7.1		26.6

4. Calculate the areas.

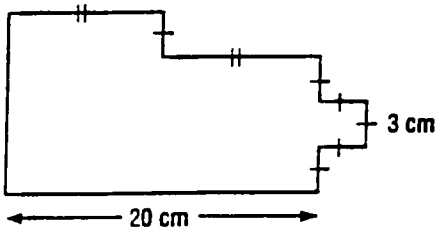
a)



b)



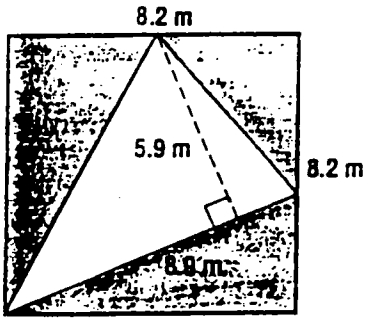
5. Find the perimeter and area of the figure.



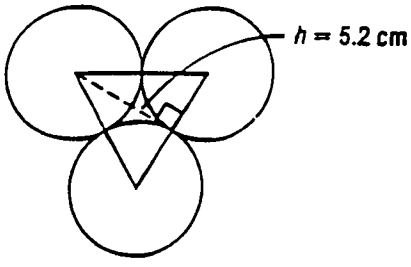
$P =$ _____

$A =$ _____

6. A triangular garden is planted within a square grassed area as shown. Find the area of the grassed section, to the nearest tenth of a square metre.



7. The area of each circle is 113.04 cm^2. Find the area of the triangle.

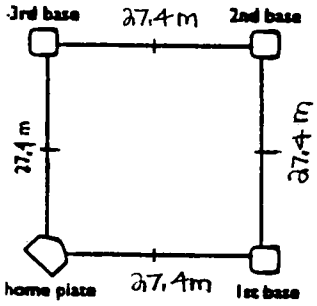


Find the length of a side of each regular polygon.

9. octagon; $P = 62.8$ cm

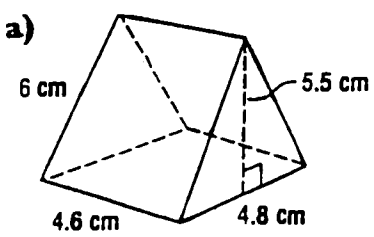
10. pentagon; $P = 45$ cm

11. What straight-line distance does the ball travel when it's thrown from third base to first?

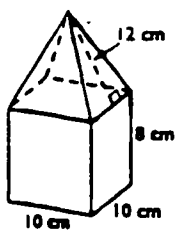


8. *Calculate the surface area.*

a)



b)



Fractions

Order the fractions from smallest to largest.

1. $\frac{3}{4}, \frac{1}{8}, \frac{3}{5}, \frac{7}{10}$ _____

2. $\frac{1}{3}, \frac{4}{9}, \frac{2}{5}, \frac{9}{15}$ _____

Simplify. Write your answers in lowest terms.

3. $2\frac{5}{6} - 1\frac{3}{5}$ _____

4. $1\frac{3}{4} \div \frac{1}{6}$ _____

5. $\frac{5}{8} + \frac{1}{6}$ _____

6. $\frac{3}{5} - \frac{1}{3}$ _____

7. $\frac{11}{12} \times \frac{1}{4}$ _____

8. $\frac{11}{16} \div \frac{1}{8}$ _____

9. $2\frac{1}{2} + 1\frac{3}{5}$ _____

10. $3\frac{5}{8} - 1\frac{1}{6}$ _____

11. $4\frac{1}{3} \times 1\frac{2}{7}$ _____

12. $3\frac{1}{4} \div 3\frac{3}{8}$ _____

Calculate. Write your answers in lowest terms.

13. $\left(1\frac{1}{5}\right)^2$ _____

14. $\frac{1}{7}$ of 84 _____

15. $\frac{7}{12} + \frac{7}{9} \div \frac{2}{3}$ _____

16. $2\frac{5}{8} + \frac{1}{4} \times 1\frac{5}{6}$ _____

17. $\frac{7}{9} \times \frac{1}{2} - \frac{7}{12} \div 1\frac{3}{4}$ _____

18. $\left(3\frac{2}{3} \div 2\frac{4}{9}\right)^2$ _____

19. $3\frac{1}{3} + \frac{1}{2}$ of $6\frac{3}{4}$ _____

20. $1\frac{3}{5} \times 1\frac{2}{7} + 1\frac{1}{2} \div 1\frac{1}{4}$ _____

21. $2\frac{1}{4} \div \left(\frac{1}{2} + \frac{2}{5}\right)^2$ _____

22. $\frac{1}{3}$ of $8 + \frac{1}{4} - \frac{5}{12}$ _____

Write each decimal as a fraction in lowest terms.

23. 0.32 _____

24. 0.9 _____

25. 1.25 _____

26. $0.\overline{7}$ _____

27. 0.06 _____

28. 2.55 _____

29. $0.\overline{27}$ _____

30. $3.\overline{3}$ _____

Write each fraction as a terminating or repeating decimal.

31. $\frac{1}{6}$ _____

32. $\frac{5}{8}$ _____

33. $\frac{11}{15}$ _____

34. $\frac{9}{20}$ _____

35. $\frac{4}{9}$ _____

36. $\frac{17}{25}$ _____

37. The path around a garden is made of paving stones. The path is 16 m long and each stone is $\frac{2}{3}$ m. How many stones are used?

_____

39. Tanya can type one page in $2\frac{1}{2}$ min.
a) How long will it take her to type 15 pages?
b) How many pages can she type in 12 min?

Percent

Write each fraction as a percent.

1. $\frac{3}{5}$ _____

2. $\frac{6}{8}$ _____

3. $\frac{13}{20}$ _____

4. $\frac{7}{25}$ _____

5. $\frac{7}{10}$ _____

6. $\frac{36}{40}$ _____

Write each percent as a fraction in lowest terms.

7. 40% _____

8. 74% _____

9. 86.5% _____

10. 12% _____

11. 117% _____

12. 4% _____

Write each percent as a decimal.

13. 58% _____

14. 137% _____

15. $7\frac{1}{2}\%$ _____

16. 48.4% _____

17. $62\frac{3}{4}\%$ _____

18. 14.8% _____

Write each decimal as a percent.

19. 0.32 _____

20. 0.05 _____

21. 1.42 _____

22. 0.145 _____

23. 4.8 _____

24. 5.04 _____

Calculate.

25. 14% of 250 _____

26. 7.5% of 70 _____

27. 58% of 165 _____

28. 125% of 136 _____

Calculate each percent.

29. 94 of 200 _____

30. 25 of 500 _____

31. 24 of 120 _____

32. 495 of 1100 _____

Find the number.

33. 20% of a number is 145. _____

34. 72% of a number is 40.32. _____

35. 60% of a number is 120. _____

36. 5% of a number is 48. _____

37.
Calculate the discount price of each item during a "20% off" sale and then calculate the GST and PST for your province.

Item	Original Price	Discount Price	GST	PST
Scarf	$12.50			
Wallet	$49.98			
Jacket	$155.45			
Gloves	$32.50			

38. Natalie earns $250 per week, plus commission, for selling luggage. In one week, she earned a total of $439.70, with sales of $5420. What is Natalie's rate of commission?

_____

39. Interest is being paid on a savings account at a rate of 8.5% per year. How much would be in an account if the following amounts of interest were paid?

a) $72.75 _____ b) $45.50 _____ c) $140.65 _____

40. In 3 years, Kateri earned $228 interest at $9\frac{1}{2}\%$ on the savings bonds her parents gave her. How much were the bonds worth?

_____

41. *Write each fraction as a percent to the nearest tenth.*

a) $\frac{1}{6}$ _____ b) $\frac{2}{3}$ _____ c) $\frac{5}{11}$ _____

Probability

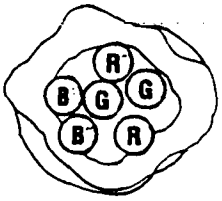
In questions 1 to 4, find the probability of each event.

1. Choose 1 marble from the bag.

a) $P(R)$ _____

b) $P(G)$ _____

c) $P(B)$ _____

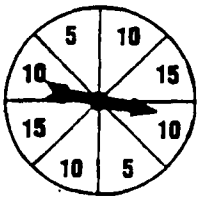


2. Spin the spinner.

a) $P(5)$ _____

b) $P(10)$ _____

c) $P(15)$ _____



3. Roll a die.

a) $P(1)$ _____

b) $P(2 \text{ or } 3)$ _____

c) $P(\text{even number})$ _____

d) $P(\text{less than } 4)$ _____

4. Toss 2 coins.

a) $P(H, H)$ _____

b) $P(\text{at least 1 H})$ _____

c) $P(1 H, 1 T)$ _____

5. a) List the possible outcomes when you roll 2 dice.

_____

_____

_____

b) How many possible outcomes are there?

_____

c) How many possible outcomes total 5?

_____

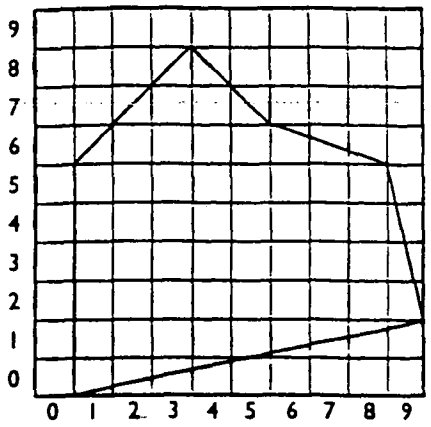
d) What total happens most often? In how many ways does it happen?

_____

e) What totals happen least often?

_____

6. Use a probability technique to find the area of the figu



7. Jonah has a set of alphabet blocks. If he puts them all in a bag, what is the probability of pulling out each of the following?

a) an F _____ b) a P _____

c) a consonant _____

d) a vowel _____

8. A bag contains 9 black marbles, 6 green marbles, and 5 red marbles. If you choose one marble without looking, what are the following probabilities? Express the probabilities as percents.

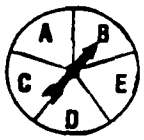
a) $P(\text{black})$ _____

b) $P(\text{green})$ _____

c) $P(\text{red})$ _____

d) $P(\text{red or black})$ _____

9. Use a tree diagram to show the possible outcomes when you spin the two spinners.



Use your results to find these probabilities. Express the probabilities as percents.

a) $P(1, D)$ _____ b) $P(2, B)$ _____

c) $P(\text{even number, consonant})$ _____

d) $P(\text{odd number, vowel})$ _____

10. A bag contains a blue, red, yellow, green, and whit counter. Ayesha draws a counter from the bag, return it to the bag, then draws a second counter. Make a tre diagram to find the probability that Ayesha will get th same color both times.

Rational Numbers

1. Which is greater? Tell how you know.

a) $\frac{2}{3}$ or $-\frac{3}{4}$ b) $-2\frac{3}{5}$ or $-2\frac{3}{8}$

c) $3\frac{2}{5}$ or $3\frac{3}{5}$ d) $-3\frac{1}{2}$ or $-2\frac{7}{8}$

2. Add, then estimate to check.

a) 11.3 + 14.7 b) 26.54 + (−22.32)

c) −128.19 + (−456.3) d) 9.82 + (−83.5)

e) −1251.35 + (−3266.18) f) −943 + 524.81

3. Subtract, then estimate to check.

a) 12.54 − (−18.23) b) 15.85 − 2.3 c) 6.54 − 11.72

d) −56.12 − (−18) e) −143.2 − 65.11 f) 136 − (−53.75)

4. Calculate

a) 4.2 × 6.5 b) −4.8 ÷ (−6) c) 7.2 × (−3.1)

d) 3.6 ÷ (−0.9) e) −5.4 × (−2.8) f) −0.92 ÷ 2.3

5. What might each missing number be?

a) 8.36 × □ ≅ 26 b) □ × 4.21 ≅ 47 c) □ ÷ 3.2 ≅ 7

d) 32.8 ÷ □ ≅ 4 e) 57.19 ÷ □ ≅ 8 f) □ × 21.17 ≅ 110

Integers

Simplify.

1. $7 - 2 \times 3$ _____

2. $-8 + 14 \div (-2)$ _____

3. $-6 + (-3) \times 4$ _____

4. $48 \div (-12) + 3$ _____

5. $16 \div (-2) - 3$ _____

6. $-11 \times 4 \div (-2)$ _____

7. $60 - 6 \div 6 + (-8)$ _____

8. $20 \times (-4) \div 8 + (-3)$ _____

9. $12 - 16 - 24 - (-6)$ _____

10. $-9 \times 6 + 7 \times (-3)$ _____

Simplify.

21. $(-4)^3 \times 2 \div 8 + (-14)$ _____

22. $6(3 - 4) - 7 \times (-2)^3$ _____

23. $32 \div 2(3 - 7)$ _____

24. $2(7 - 9) - 6(9 \div 3)$ _____

25. $4 \times 2(3 + 5)$ _____

26. $7(4 + (-8)) \div (-2)^2$ _____

11. $-3 \times 2^3 + 12$ _____

12. $4^2 \div (-8) + 7$ _____

13. $7 \times (-3) - (-3)^3$ _____

14. $3 - (-2)^3 + 7$ _____

15. $8^2 - 8 \times 9$ _____

16. $(-3)^2 + (-10)^3$ _____

17. $6 \times 5 - (-2)^5$ _____

18. $3 \times (-3)^2 \div 3^3$ _____

19. $(-8)^2 \div 2^3 - 3 \times 4^2$ _____

20. $12^2 - (-6)^2 + (-3)^3$ _____

27. $\frac{-6 \times 3}{-1}$ _____

28. $\frac{7 - 4 \times 2}{(-1)^3}$ _____

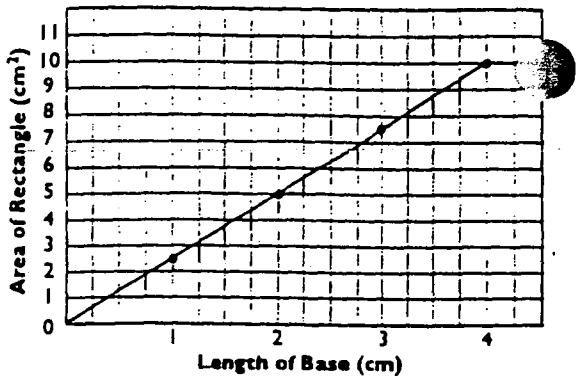
29. $\frac{18 \div 9 \times 4}{4 - 6}$ _____

30. $\frac{-6 + (-9)}{7 - 2^2}$ _____

31. The sum of 2 integers is +5. Their product

Variables and Expressions

1. The graph shows the areas of rectangles that have the same height but different base lengths.



   a) Describe the pattern.
   b) Create an expression to find the area of any rectangle with this height.
   c) What must the height of the rectangle be? Explain.
   d) What would the area be if the base length were 10 cm? 25 cm?

2. Describe each expression in words.

   a) $3t + 12$ b) $\frac{r}{2} - 3$ c) $5 + \frac{10}{s}$

3. Write an expression for each.
   a) 5 more than twice a number
   b) 6 less than a number divided by 2
   c) one eighth of a number
   d) a number multiplied by 12, then decreased by 11

4. a) This table of values was created from one of these expressions: $x - 4$, $2x - 2$, or $x - 2$. Which expression was used?

Value for x	-2	-1	0	1	2
Value of Expression	-6	-4	-2	0	2

   b) Extend the table of values so it includes all integer values for x from -5 to $+5$.

5. Model each expression using tiles.
   a) $x - 5$ b) $3x + 1$ c) $3 - x$ d) $4x^2 - 2$

6. Admission to a fair is \$5. There's an additional charge of \$1.50 for each ride.
   a) What expression can you use to find the combined cost of admission and rides for any number of rides?
   b) Make a table of values for 1 to 6 rides.
   c) Draw the graph for your table of values.

7. *Evaluate for $x = 4$ and $y = 1.5$.*

   a) $3x + 4y$ b) $x^2 - 3y$

   _____ _____

   c) $3x^2 - (6y)^2$ d) $2xy - 3x$

Writing Equations and Working with Formulas

1. a) Complete the table.

Hours (h)	1	2	3	4	5	6
Cost (C)	12	24	36			

b) Write a formula for the pattern.

_____

2. The formula for the circumference of a circle is $C = 2\pi r$. Write a formula for calculating the radius when the circumference is known.

_____

3. a) Complete the table.

Number of Squares	Figure	Perimeter
1		4
2		6
3		8
4		
5		
6		

b) Write a formula for the perimeter in terms of the number of squares.

_____

c) What is the perimeter of the figure made from 24 squares?

_____

d) How many squares are in the figure with a perimeter of 62?

_____

Write an equation that could be used to solve each problem.

12. Miguel is four years older than Jasmine. The sum of their ages is twenty-eight. How old is Jasmine?

_____

13. Manitoba has twice as many days of thunderstorms in a year as New Brunswick. Together, they have thirty-nine days of thunderstorms. How many days of thunderstorms does New Brunswick have?

Write an equation for each statement.

4. Three added to a number is twelve.

_____

5. A number decreased by six is four.

_____

6. A number divided by three is eight.

_____

7. A number multiplied by nine is fifty-four.

_____

8. The sum of a number and three less than the number is sixteen.

_____

9. A number multiplied by seven, then increased by nine, is thirty.

_____

10. A number decreased by four, then divided by two, is eight.

_____

11. Six more than three times a number is twenty-four.

_____

14. The mass of a bobcat is one-fifth the mass of an Arctic wolf. Their combined mass is forty-eight kilograms. What is the mass of a bobcat?

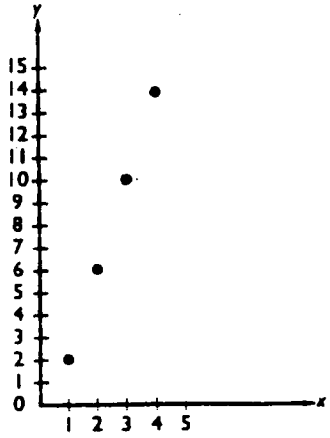
_____

15. At Niagara Falls, the American Falls are two metres higher than the Horseshoe Falls. The sum of their heights is 116 m. How high are the Horseshoe Falls?

Equations

1. Write an equation for each situation.
   a) Three times the number of coins in my pocket plus 2 more is 29.
   b) If I gave away \$12, I would have \$17 left.
   c) If my arm were 15 cm longer, its length would be 75 cm.
   d) There are 27 people in $\frac{3}{4}$ of my class.

2. a) Make a table of values for the points on the graph.
   b) Write an equation that describes the relationship between the x and y coordinates on the graph.



3. Solve each equation using a guess-and-test strategy.
   Explain how you decided on your first guess for each variable.
   a) $3a + 6 = 39$ b) $16 = 4n - 12$
   c) $23 - 2b = 11$ d) $-4g - 9 = -1$

4. *Write an equation for each statement.* *Solve.*

   a) The sum of three consecutive numbers is forty-five.

   _____

   b) If you multiply a number by nine, then subtract six, the result is fifty-seven.

   _____

   c) Jupiter has eight times as many moons as Mars. Mars has two moons. How many moons does Jupiter have?

   _____

   d) The sum of three numbers is twenty-nine. The second number is three times the first number, and the third number is four more than the first number. What are the three numbers?

   _____

   _____

Equations

Solve and check
$4x - 2 = -6$.

Add 2 to both sides:

$$4x - 2 = -6$$
$$4x - 2 + 2 = -6 + 2$$
$$4x = -4$$

Divide both sides by 4:

$$\frac{4x}{4} = \frac{-4}{4}$$
$$x = -1$$

Check: L.S. $= 4x - 2$
$= 4(-1) - 2$
$= -4 - 2$
$= -6$

R.S. $= -6$

The solution is $x = -1$.

Solve

1. $x + 4 = -2$

2. $x + 10 = 3$

3. $x - 8 = 3$

4. $x - 5 = -8$

5. $7 + x = -11$

6. $-10 + x = 17$

7. $x + 12 = -6$

8. $x - 7 = -12$

9. $x - 4 = -4$

10. $-7 = x - 3$

Solve

11. $7x = -28$

12. $-4y = -20$

13. $\frac{z}{5} = -3$

14. $\frac{p}{-3} = 11$

15. $\frac{w}{-4} = -8$

16. $-9q = 36$

17. $-8b = -32$

18. $\frac{45}{n} = -9$

Solve and check.

19. $4x - 3 = -11$

20. $6y + 4 = -8$

21. $9z - 5 = 22$

22. $6p + 10 = -14$

23. $3q - 3 = -27$

24. $2a + 5 = 1$

Solve

25. $3(y - 2) = -18$

26. $4x + 2(x - 1) = -20$

27. $2(p - 3) + 6 = 4p - 10$

28. $5(w + 2) = 3(w - 4)$

Solve and check.

29. $x + 2.1 = -3.8$

30. $y - 1.7 = -6.5$

31. $z - (-1.4) = -7.2$

32. $p - (-3.2) = 5.9$

Grade 8 Math Exam Review
Mixed Problems

Complete the following questions in preparation for your exam.

1. A dress costs $98.69. There is a 15% off sale, plus, if you put it on the store credit card, you get another 10% off. What is the new cost of the dress, including taxes?

2. Using the following data set, find the mean, median and mode.

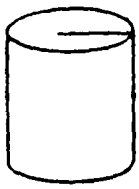
   7, 6, 4, 12, 18, 14, 3, 9, 11, 7, 8, 15

3. a) A number is multiplied by three and decreased by seven. Write a number sentence for this problem.

   b) If the expression above is equal to eleven, find the number. Show all work!

4. Sherri has two chocolate bars. She eats ¼ of one of the chocolate bars and decides that she does not want any more. Therefore, she shares the rest of her chocolate with 3 of her friends. How much does each friend get?

Grade 8 Math Exam Review
Mixed Problems

5. a)  If the volume of this cylinder is anywhere between 1200 mL and 1700 mL, find its radius and height.

b) What is the surface area of the cylinder above.

6. Add, subtract, multiply or divide the following fractions.

a) $\frac{2}{3}+\frac{1}{5}$

b) $\frac{7}{8}-\frac{1}{3}$

c) $1\frac{2}{5}\times\frac{10}{49}$

d) $2\frac{2}{3}+\frac{32}{36}$

e) $\frac{1}{4}+3\frac{3}{5}$

f) $2\frac{4}{7}-1\frac{1}{6}$

Grade 8 Math Exam Review
Mixed Problems

7. The following pizza menu has just been added at Mario's Diner.

Veggies	Meat	Toppings
Mushrooms	Ham	Pineapple
Onions	Beef	Tomatoes
Green Peppers	Pepperoni	

a) How many different pizza combinations are possible?

b) If someone designed a pizza for you at random with one of each topping, what is the probability that you would get ham on your pizza?

c) Assuming that you cannot repeat toppings, how many different pizzas could you make with mushrooms, green peppers, beef and pineapple?

8. A map of Canada has a scale of 1:2 000.000

a) In your own words, what does this mean?

b) On the map, it is 3.5 cm from Winnipeg to Halifax. How far would it be in real life?

9. Solve the following algebraic expressions. Remember BEDMAS!

a) $5 + 2(6 + 7)$

b) $400 \div 20 + 13 - 16 \times 2$

c) $9 + 7 \times 2^2 \div 14 - 11$

d) $-7 + 3(2 + 3 \times 4)$

10. A Textile company must cut circles from a square piece of cl
Does 1 circle size waste less cloth than the other? Justify y
answer by showing your calculations