

Addition of Decimals (NSN)

1. Add. Show all your work. Don't forget to line up the numbers according to place value!

a) $0.8 + 0.9$

b) $1.8 + 9.5$

c) $17.5 + 37.9$

d) $0.65 + 0.77$

e) $14.85 + 51.26$

f) $167.33 + 467.93$

g) $15.06 + 17.9$

h) $145.007 + 45.58$

i) $1\,056.4 + 664.087$

2. To win a prize, Maria must correctly answer a skill-testing question. Does she win if her answer is 160.5138?

$14.67 + 139.008 + 0.0458 + 6.7$

Subtraction of Decimals (NSN)

1. Subtract. Show all your work. Don't forget to line up the numbers according to place value!

a) $0.9 - 0.4$

b) $4.8 - 3.9$

c) $17.5 - 8.8$

d) $10.65 - 4.77$

e) $51.85 - 30.09$

f) $167.33 - 9.97$

g) $25.06 - 15.008$

h) $145.007 - 49.58$

i) $1\,056.4 - 664.087$

2. To win a prize, John must correctly answer a skill-testing question. Does he win the prize if he answers 111.733?

$139.8 - 12.04 - 16.027$

Relationship Between Fractions and Decimals (*NSN)

1. Remember that a fraction is a division! Convert each of these fractions into decimals.

a) $27/100$

b) $7/10$

c) $5/8$

d) $234/1000$

e) $5/100$

f) $89/1000$

g) $12/10$

h) $13/50$

h) $5/11$

i) $5/12$

k) $1/6$

l) $9/16$

m) $0/85$

n) $7/7$

o) $15/12$

p) $16/11$

2. Convert the following decimals into fractions or mixed number fractions. Reading the fraction out loud using place value will help you build your fractions!

a) 0.7

b) 0.67

c) 0.4

d) 0.40

e) 0.66

f) 0.76

g) 1.5

h) 3.3

i) 5.09

j) 0.008

k) 0.282

l) 5.555

Comparing & Ordering Decimal Numbers (*NSN)

1. Inside each box, insert either the “less than sign” (<), “greater than sign” (>) or an “equal sign” (=).

a) $2.5 \square 2.6$ b) $4.15 \square 4.14$ c) $22.45 \square 22.49$ d) $48.125 \square 48.152$

e) $2.5 \square 2.05$ f) $4.45 \square 4.4$ g) $102.05 \square 102.50$ h) $82.125 \square 82.215$

i) $0.9 \square 9.0$ j) $40.51 \square 40.501$ k) $1.879 \square 1.978$ l) $7.08 \square 7.008$

m) $0.5454 \square 0.5545$ n) $202 \square 220.6$ o) $14.754 \square 14.76$

2. Convert fractions into decimals first. Then, place inside each box, insert either the “less than sign” (<), “greater than sign” (>) or an “equal sign” (=).

a) $0.5 \square \frac{1}{2}$ b) $0.15 \square \frac{1}{10}$ c) $\frac{42}{10} \square 4.02$ d) $8.125 \square \frac{8}{1000}$

e) $\frac{11}{4} \square 2.57$ f) $\frac{17}{4} \square 4.2$ g) $2.05 \square \frac{205}{1000}$ h) $0.125 \square \frac{12}{100}$

i) $\frac{90}{10} \square 9.0$ j) $4.51 \square \frac{22}{5}$ k) $0.022 \square \frac{202}{1000}$ l) $0.08 \square \frac{80}{900}$

m) $1.52 \square \frac{5}{4}$ n) $2.16 \square \frac{13}{6}$ o) $\frac{5}{8} \square 0.\overline{5}$ p) $\frac{9}{11} \square \frac{81}{100}$

3. List the values from greatest to least:

a) 5.05 $\frac{105}{20}$ 5.5 5.005 b) 0.7 0.707 0.07 7.7 $\frac{77}{100}$

c) 1.14 4.1 1.04 $\frac{14}{10}$ 4.01 d) 33.05 33.005 $\frac{67}{2}$ 330.5 33.55

Multiplying Decimal Numbers (NSN)

1. Multiply. Show your work!

a) 18×3

b) 1.8×3

c) 18.06×3

d) 0.57×4

e) 12.44×5

f) 156.554×6

g) 123.87×7

h) 0.58×8

i) 1.008×9

2. Find the product of 45.88 and 6:

3. Melinda worked an 8 hour shift at McZonalds's last night. Her hourly rate is \$10.83 per hour. How much did she make for her shift?

Dividing Decimal Numbers (NSN)

1. Divide. Show your work!

a) $504 \div 6$

b) $50.4 \div 6$

c) $5.04 \div 6$

d) $7.2 \div 9$

Remember: A fraction is a division!

e) $17.15 \div 7$

f) $2.736 \div 3$

g) $0.048 \div 4$

h) $1002.028 \div 2$

i) $10\,034.4 \div 8$

2. Eight piled-up novels measure 27.6 cm. How thick is each novel? Show your work.
3. If a car travelled 409.36 km in 4 hours, what was its average speed (how many KMs in one hour?)

Application Questions Involving Decimals (*NSN)

- There are 102 students in the school. If 58 are boys, write a decimal for the part of the school that consists of:
a) Boys: b) Girls: c) Both boys and girls
- It takes Julie eight thousandths of a second for her brain to register the color red on a computer screen. Write this number as a decimal.
- Five sprinters are entered into a competition for the 100m dash. Four of the sprinters had their turns. Their scores are:
R#1: 49/5 s R#2: Double of 4.875 s R#3: A third of 29.43s R#4: 9.79s
How fast must the last runner be in order to win the competition?
- Marco wants to buy the following items: A pair of jeans for \$49.95, a belt for \$19.95 and a t-shirt for \$21.95. Does he have enough money to buy all three items with \$90?
- What is the combined length of the following wood pieces? Pay close attention to the units of measure!
0.008m 0.125m 0.8cm 0.15m 0.185m 0.005m 45cm

Application Questions Involving Decimals (*NSN)

6. Carefully measure the width of the teacher's desk top, to the nearest cm. If we were to line up 9 such desks side-by-side, what would be their combined length?
7. Once fully stretched, a bungee cord expands four times its original length. If a completely stretched bungee cord measures 50.6m, what is its original length?
8. Marty goes to the grocery store with \$20. He buys 3 identical frozen pizzas. He gives the cashier his \$20 bill and she gives him \$2.66 in change. How much was each pizza?
9. If we cut 0.45m off a piece of rope measuring 7.4m, what would be the combined length of fifteen of these cut/shortened ropes?
10. Jody's Dad makes up a riddle. He says that he will give her \$5 if she can accurately multiply the difference between 10.4 and 7.76 by eight. Jody's answer is "21.12". Does she get \$5?

Order of Operations

Step 1
BStep 2
EStep 3
Left to Right
DMStep 4
Left to Right
AS

(*NSN)

1. Solve using B E MD AS . Use the pre-set number of lines, as taught in class!

a) $100 - 25 \div 5$

=

=

b) $5 + 3 \times 2$

=

=

c) $4 + 8 \div 4$

=

=

d) $10 \div (8 - 3)$

=

=

e) $2 + 20 \div (8 - 3)$

=

=

=

f) $5 \times 4 \div 2$

=

=

g) $5 \times 8 \div 4$

=

=

h) $8 \times 9 - 30 \div 5$

=

=

=

i) $7 - 2 + 8 \cdot 2$

=

=

=

j) $49 + 8 \div 8 + 49$

=

=

=

k) $3 \times 4 - (2 + 6)$

=

=

=

l) $56 \div 8 + 4 \cdot 2$

=

=

=

Order of Operations

Step 1

Step 2

Step 3
Left to RightStep 4
Left to Right

(*NSN)

B

E

DM

AS

1. Solve using B E MD AS . Use the pre-set number of lines, as taught in class!

a) $19 + 7 \times 2 + 10$

=

=

=

d) $23 + 15 - 9 \cdot 3$

=

=

=

g) $15 - 2(6 - 5)$

=

=

=

j) $7(9 - 5) + 6$

=

=

=

m) $6 \times 5 \div 2 \times 5$

=

=

=

b) $36 \div (3 \times 3) + 4$

=

=

=

e) $12 \times 8 \div 4$

=

=

=

h) $18 - 2 \cdot 9 + 15$

=

=

=

k) $3 + 0 \times 5 + 14$

=

=

=

n) $28 \div 4 + 3 \times 8 - 6$

=

=

=

=

c) $144 \div 12 - 8 + 15$

=

=

=

f) $8 - 4 - 2 + 6$

=

=

=

i) $50 - 8 \times 4 \div 2 + 5$

=

=

=

=

l) $46 \times 2 - 15 \times 2$

=

=

=

o) $36 \div 12 + (3 + 2 \cdot 4)$

=

=

=

=

Order of Operations With Decimals

Step 1

B

Step 2

E

Step 3
Left to Right

DM

Step 4
Left to Right

AS

(•NSN)

1. Solve using B E MD AS . Use the pre-set number of lines, as taught in class:

a) $4.2 - 1.5 \times 1.4$

b) $7 - 6.4 + 8.4$

c) $3.6 \div (4.1 - 2.9)$

d) $5(4.2 + 8)$

e) $5 \times 4.2 + 8$

f) $36 \div 2.4 \times 3$

g) $36 \div (2.4 \times 3)$

h) $2.7 + 4.7 - (7.8 \div 5.2 + 2.8)$

i) $0.8 \div (4.5 \div 9) + 6.5 \times 10$

j) $(7.1 + 7.6 - 6.8 \div 4) \times 9$

k) $5 [10.3 \times 4 - (3.5 \div 7 + 6.5) \times 2]$

Powers/Exponents (4NSN)

1. Fill in the missing information:

a) $6^5 = 6 \times$ _____

b) _____ $= 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2$

c) $7^4 = 7 \times 7$ _____

d) _____ $= 3 \cdot 3$

e) $3^6 = 3 \cdot$ _____

f) Nine squared: $9 \times$ _____

g) Five cubed $= 5 \times$ _____

h) $7^0 =$ _____

2. Step 1: Write as a repeated multiplication. Step 2: Express your answer in standard form. The first one is done for you.

a) $6^2 = 6 \times 6 = 36$

b) $4^5 =$ _____

c) $2^4 =$ _____

d) $10^3 =$ _____

e) Eight cubed $=$ _____

f) Four squared $=$ _____

g) Five to the seventh power: _____

h) $6^0 =$ _____

i) $3^4 =$ _____

j) $1^{100} =$ _____

3. Write each in two different word form. The first one is done for you.

a) $6^5 \rightarrow$ Six to the power of five

Six to the fifth power

b) $3^2 \rightarrow$ _____

c) $9^3 \rightarrow$ _____

d) $2^4 \rightarrow$ _____

e) $8^0 \rightarrow$ _____

4. True or false? Apart from 0, any number to the power of zero is equal to “1” : _____

5. In the power “ 7^5 ”, seven is called the _____ and five is called the _____.

Powers/Exponents (4NSN)

1. What is the value of “b” in each of the following?

a) $49 = 7^b$

b) $64 = 4^b$

c) $1 = 10^b$

d) $100 = 10^b$

e) $4096 = 8^b$

f) $32 = 2^b$

g) $10\,000 = 10^b$

h) $3125 = 5^b$

i) $81 = 3^b$

2. Write the standard value of each power. Then with each pair, circle the expression with the largest value.

a) 6^2 OR 2^6

b) 5^3 OR 12^2

c) 3^6 OR 6^3

d) 3^2 OR 2^3

e) 4^2 OR 2^4

f) $(8-4)^2$ OR, 2^8

g) 7^2 OR 2^3

h) 10^3 OR 3^{10}

i) 11^0 OR 0^{11}

3. Complete the following table:

Exponential Form	Base	Exponent	Word Form	Factored Form	Standard Form
3^4					
	2	3			
			Nine Cubed		
				$5 \cdot 5 \cdot 5 \cdot 5 \cdot 5$	
					64

4. A square has base and height of 5cm. Calculate its area (Area = B X H). What do you notice about the unit of measure? How does it relate to the topic of powers/exponents?

Square Roots (*NSN)

1. When we square a whole number, the answer is a perfect square. For example:

$$3 \times 3 = 9 \quad \text{"9" is a perfect square}$$

List the first twelve perfect squares: _____

2. What is the square root of each of the following perfect square values? Do not use a calculator to find the answer. The first one is done for you.

a) $\sqrt{49} = 7$
(because $7 \times 7 = 7^2 = 49$)

b) $\sqrt{4} =$ _____

c) $\sqrt{81} =$ _____

d) $\sqrt{121} =$ _____

e) $\sqrt{1} =$ _____

f) $\sqrt{16} =$ _____

g) $\sqrt{25} =$ _____

h) $\sqrt{144} =$ _____

i) $\sqrt{9} =$ _____

j) $\sqrt{36} =$ _____

k) $\sqrt{64} =$ _____

l) $\sqrt{100} =$ _____

3. From the following list, circle the values that are perfect squares.

121

10

1

225

100

12

15

1 000

80

64

10 000

81

4. If we square root non perfect-squares, the answer will be a decimal. Using your calculator, find the square roots of the following values. Round to the nearest tenths.

a) $\sqrt{10} =$ _____

b) $\sqrt{27} =$ _____

c) $\sqrt{41} =$ _____

d) $\sqrt{50} =$ _____

e) $\sqrt{75} =$ _____

f) $\sqrt{99} =$ _____

Ordering & Subtracting Integers (•NSN)

1. Inside each box, insert either the “less than sign” (<), “greater than sign” (>) or an “equal sign” (=).

a) $(+6) \square (+7)$ b) $(+4) \square (+3)$ c) $(-4) \square (+4)$ d) $(-4) \square (-3)$

e) $(+6) \square (-4)$ f) $(+4) \square (-3)$ g) $(-3) \square (+3)$ h) $(-3) \square (-4)$

i) $(-6) \square (-7)$ j) $(-10) \square (-11)$ k) $(-15) \square (-13)$ l) $(+14) \square (+13)$

m) $(-2) \square (0)$ n) $(-1) \square (-2)$ o) $(-7) \square (-4)$ p) $(+5) \square (-1)$

q) $(-6) \square (-5)$ r) $(-10) \square (-10)$ s) $(-11) \square (-12)$ t) $(+15) \square (-13)$

u) $(-1) \square (-2)$ v) $(-11) \square (-22)$ w) $(-17) \square (-14)$ x) $(-100) \square (-110)$

2. List the values from greatest to least:

a) -3 -5 +3 +5 -1: _____

b) -11 -4 +5 +6 0: _____

c) -6 -7 -9 -8 -5: _____

d) +3 +5 -1 0 -11: _____

e) -212 -240 -135 -189 -55: _____

3. Circle the greater value for each pair of integers:

a) +5 OR +6 b) -5 OR -6 c) -9 OR +9 d) 0 OR -1

e) -3 OR -4 f) +7 OR +6 g) -130 OR -128 h) -214 OR -241

4. Write 5 integers that are:

a) Greater than -10: _____

b) Lesser than -6: _____

Adding & Subtracting Integers (•NSN)

1. Find the sum or difference:

- | | | |
|---------------------------|-----------------------------|-----------------------------|
| 1. $(+4) + (+2) =$ _____ | 23. $(-3) + (-2) =$ _____ | 45. $(-7) - (+3) =$ _____ |
| 2. $(-5) + (+5) =$ _____ | 24. $(+9) + (+4) =$ _____ | 46. $(-8) - (+7) =$ _____ |
| 3. $(0) + (-3) =$ _____ | 25. $(+1) + (-6) =$ _____ | 47. $(-4) - (-9) =$ _____ |
| 4. $(-7) + (-2) =$ _____ | 26. $(+6) + (-11) =$ _____ | 48. $(-9) - (+3) =$ _____ |
| 5. $(-7) + (-5) =$ _____ | 27. $(-5) + (-6) =$ _____ | 49. $(-4) - (-15) =$ _____ |
| 6. $(-8) + (-4) =$ _____ | 28. $(+25) + (-14) =$ _____ | 50. $(+2) - (-3) =$ _____ |
| 7. $(+19) + (0) =$ _____ | 29. $(-17) + (-9) =$ _____ | 51. $(-1) - (+4) =$ _____ |
| 8. $(+7) + (+3) =$ _____ | 30. $(+14) + (+6) =$ _____ | 52. $(-18) - (+23) =$ _____ |
| 9. $(+4) + (-4) =$ _____ | 31. $(+3) + (-21) =$ _____ | 53. $(+19) - (-12) =$ _____ |
| 10. $(-8) + (-6) =$ _____ | 32. $(+8) + (+13) =$ _____ | 54. $(0) - (-14) =$ _____ |
| 11. $(-9) + (-3) =$ _____ | 33. $(-13) + (+16) =$ _____ | 55. $(-6) - (-6) =$ _____ |
| 12. $(-5) + (+3) =$ _____ | 34. $(+5) - (-2) =$ _____ | 56. $(-7) - (-8) =$ _____ |
| 13. $(-8) + (+9) =$ _____ | 35. $(-8) - (+8) =$ _____ | 57. $(-3) - (-15) =$ _____ |
| 14. $(-2) + (-2) =$ _____ | 36. $(+3) - (-5) =$ _____ | 58. $(+5) - (-9) =$ _____ |
| 15. $(-4) + (-7) =$ _____ | 37. $(-9) - (+9) =$ _____ | 59. $(-8) - (+3) =$ _____ |
| 16. $(+8) + (+6) =$ _____ | 38. $(-15) - (-14) =$ _____ | 60. $(-10) - (+2) =$ _____ |
| 17. $(-2) + (-8) =$ _____ | 39. $(0) - (0) =$ _____ | 61. $(-4) - (-9) =$ _____ |
| 18. $(-7) + (-5) =$ _____ | 40. $(-8) - (-3) =$ _____ | 62. $(-9) - (-13) =$ _____ |
| 19. $(+2) + (+9) =$ _____ | 41. $(+3) - (-14) =$ _____ | 63. $(+4) - (-8) =$ _____ |
| 20. $(-7) + (-4) =$ _____ | 42. $(-9) - (-2) =$ _____ | 64. $(-15) - (+5) =$ _____ |
| 21. $(-6) + (+6) =$ _____ | 43. $(+7) - (-2) =$ _____ | 65. $(-8) - (-6) =$ _____ |
| 22. $(+4) + (+7) =$ _____ | 44. $(-17) - (-18) =$ _____ | 66. $(-4) - (-4) =$ _____ |

Adding & Subtracting Integers using BEDMAS (*NSN)

a) $(-5) - (-3) + (-5)$

b) $(+3) + (-3) - (-5)$

c) $(-4) - (-6) - (+8)$

d) $(+6) - (-8) + (-2)$

e) $(-11) - (-5) + (-4)$

f) $(+2) + (+8) - (-9)$

g) $(-12) - (-2) + (-9)$

h) $(-3) - (+7) - (-15)$

i) $(-4) - (-11) + (+8)$

j) $(+4) - (-6) + (-5) - (-2)$

k) $(-3) - (-4) - (+8) + (+10)$

l) $(-8) - (-3) + (-5) + (+9)$

m) $(-5) + (+7) - (-5) - (+3)$

n) $(+3) - (-1) - (-6) + (+3)$

o) $(-8) + (+9) + (-7) + (-4)$

p) $(-4) + (+5) - (-6) - (+1) + (-6) + (-3)$

q) $(+3) - (+4) - (+6) - (-10) + (-6)$

r) $(-3) - (-6) - (+7) - (-8) + (-6) - (-2) - (-5)$

s) $(-2) - (+3) - (+2) + (-7) + (-5) - (-7)$

Adding & Subtracting Integers With Bracket Missing on 2nd Integer (*NSN)

1. Solve:

a) $(+5) - 6 =$ _____

b) $(+5) + 9 =$ _____

c) $(+5) - 7 =$ _____

d) $(-6) - 6 =$ _____

e) $(-7) + 9 =$ _____

f) $(+9) - 1 =$ _____

g) $(+1) - 9 =$ _____

h) $(+2) + 2 =$ _____

i) $(-5) - 6 =$ _____

j) $(0) - 7 =$ _____

k) $(-8) + 4 =$ _____

l) $(+8) - 1 =$ _____

m) $(+5) - 0 =$ _____

n) $(+8) - 3 =$ _____

o) $(+1) - 9 =$ _____

p) $(-2) - 2 =$ _____

q) $(-7) + 7 =$ _____

r) $(-9) - 5 =$ _____

t) $(-5) - 9 =$ _____

u) $(+6) + 10 =$ _____

v) $(+4) - 4 =$ _____

w) $(-3) - 7 =$ _____

x) $(-7) + 0 =$ _____

y) $(-8) - 5 =$ _____

z) $(-4) - 6 =$ _____

aa) $(-4) + 9 =$ _____

bb) $(+5) + 7 =$ _____

cc) $(-1) - 1 =$ _____

dd) $(-8) + 9 =$ _____

ee) $(+3) - 3 =$ _____

ff) $(0) - 0 =$ _____

gg) $(+14) + 9 =$ _____

hh) $(-15) - 7 =$ _____

Adding & Subtracting Integers with Brackets Missing on 1st Integer (*NSN)

1. Solve:

a) $+5 - (-6) =$ _____

b) $5 + (+9) =$ _____

c) $+3 - (+7) =$ _____

d) $-6 - (+6) =$ _____

e) $-7 + (-4) =$ _____

f) $9 - (-5) =$ _____

g) $1 - (+7) =$ _____

h) $+2 + (-3) =$ _____

i) $-5 - (+5) =$ _____

j) $0 - (+7) =$ _____

k) $-8 + (-4) =$ _____

l) $8 - (-1) =$ _____

m) $5 - (-5) =$ _____

n) $+8 - (-5) =$ _____

o) $+1 - (+5) =$ _____

p) $-2 - (-4) =$ _____

q) $-7 + (-5) =$ _____

r) $-9 - (-5) =$ _____

t) $-5 - (+6) =$ _____

u) $+6 + (+10) =$ _____

v) $4 - (-4) =$ _____

w) $-3 - (-7) =$ _____

x) $-7 + (-3) =$ _____

y) $7 - (-5) =$ _____

z) $-4 - (+6) =$ _____

aa) $4 + (-9) =$ _____

bb) $+5 + (-7) =$ _____

cc) $-1 - (-1) =$ _____

dd) $-8 + (+9) =$ _____

ee) $3 - (-3) =$ _____

ff) $0 - (-6) =$ _____

gg) $14 + (-4) =$ _____

hh) $-15 - (-7) =$ _____

Adding & Subtracting Integers With No Bracket (NSN)

1. Solve:

a) $+5 - 6 =$ _____

b) $-5 + 9 =$ _____

c) $3 - 7 =$ _____

d) $-6 + 6 =$ _____

e) $-8 + 4 =$ _____

f) $3 - 5 =$ _____

g) $-1 - 7 =$ _____

h) $+2 - 4 =$ _____

i) $-5 + 5 =$ _____

j) $0 - 7 =$ _____

k) $-8 + 4 =$ _____

l) $8 - 1 =$ _____

m) $5 - 5 =$ _____

n) $+8 + 5 =$ _____

o) $+1 - 5 =$ _____

p) $-2 - 4 =$ _____

q) $-7 - 5 =$ _____

r) $-9 + 5 =$ _____

t) $-5 + 6 =$ _____

u) $+6 + 10 =$ _____

v) $4 + 5 =$ _____

w) $-3 - 7 =$ _____

x) $-7 + 3 =$ _____

y) $-7 - 5 =$ _____

z) $-4 + 6 =$ _____

aa) $4 - 15 =$ _____

bb) $-5 + 16 =$ _____

cc) $-1 + 18 =$ _____

dd) $-8 - 16 =$ _____

ee) $3 - 3 =$ _____

ff) $0 - 15 =$ _____

gg) $-14 + 30 =$ _____

hh) $-15 - 17 =$ _____

Adding & Subtracting Integers using BEDMAS and Various Bracket Placement (NSN)

1. Solve:

a) $-5 - 4 + (-5)$

b) $(+13) + 3 - 5$

c) $-4 - 6 - 6$

d) $6 - (-8) + 2$

e) $-11 - 5 + (-4)$

f) $+2 + 8 - (-9)$

g) $-12 - 2 + 9$

h) $-3 - 7 - (-19)$

i) $-4 - 13 + 8$

j) $+4 - (-7) + 5 - (-12)$

k) $(-3) - 4 - (+3) + 10$

l) $-8 - 3 + 8 - 9$

m) $(-5) + (+5) - (-5) - (+5)$

n) $+3 - (-1) - 6 + 4$

o) $-8 + (+2) + (-3) + (-4)$

p) $(-14) + 5 - 9 + 1 - 6 + 5$

q) $3 - 8 + 6 - 4 + 0 - (+8)$

r) $-3 - (-6) - (+3) - 8 + 6 - (-8) - (-5)$

s) $(-2) + 3 + 2 - 7 - 5 - 8 - 9 - 3 + (+25)$

Adding & Subtracting Integers using BEDMAS

No Brackets (*NSN)

1. Solve:

a) $-5 - 14 + -5$

b) $+13 - 3 - 3$

c) $-4 - 6 + 6$

d) $5 - 8 + 2$

e) $-11 - 5 + 8$

f) $-2 + 8 + 5 - 6$

g) $-12 - 2 - 9 - 5$

h) $-3 - 8 + 10 + 4$

i) $-4 - 3 - 7 - 6$

j) $+4 + 9 - 5 - 1$

k) $-3 - 4 - 7 - 4$

l) $-8 - 5 + 8 - 9$

m) $-5 + 5 + 5 + 5$

n) $+6 - 2 - 7 - 6 + 4$

o) $-8 - 4 - 3 + 9$

p) $-14 - 7 - 9 - 1 - 4 + 5 - 4$

q) $-3 - 8 - 6 - 4 - 0 - 3 + 15$

Factors (NSN)

1. List each number's set of factors. You can use the rainbow method:

a) $6 =$ _____

b) $10 =$ _____

c) $12 =$ _____

d) $24 =$ _____

e) $54 =$ _____

f) $72 =$ _____

g) $90 =$ _____

h) $100 =$ _____

2. Find all numbers, less than 15, that have only a list of 6 factors:

3. List each number's set of factors. You can use the rainbow method:

a) $17 =$ _____ b) $23 =$ _____

c) $31 =$ _____ d) $47 =$ _____

What do you notice about the factors of these numbers? How are they different from those listed in exercise #1?

Greatest Common Factor GCF (*NSN)

1. List all the factors of each set of numbers. Then, identify the GCF:

a) 12: _____

b) 24: _____

16: _____

30: _____

GCF of 12 and 16: _____

GCF of 24 and 30: _____

c) 28: _____

d) 32: _____

42: _____

48: _____

GCF of 28 and 42: _____

GCF of 32 and 48: _____

e) 12: _____

f) 6: _____

18: _____

12: _____

20: _____

24: _____

GCF of 12, 18 and 20: _____

GCF of 6, 12 and 24: _____

g) 20: _____

28: _____

48: _____

72: _____

GCF of 20, 28, 48 and 72: _____

Multiples (*NSN)

1. List the first five multiples of each number:

a) 2: _____	b) 9: _____
c) 6: _____	d) 8: _____
e) 3: _____	f) 25: _____
g) 13: _____	h) 7: _____
i) 15: _____	j) 11: _____

2. Circle the number(s) in the set which are multiples of the given number: *Don't forget to use the rules of divisibility **Calculator only to be used for questions i and j.

a) 3	(3, 9, 11, 15, 36, 51, 66, 392, 408, 20, 726)
b) 10	(15, 20, 25, 35, 50, 58, 90)
c) 9	(27, 45, 248, 669, 450)
d) 4	(12, 16, 28, 40, 50, 60, 108, 244)
e) 25	(60, 75, 175, 400, 455)
f) 5	(5, 10, 15, 25, 40, 95, 104, 211, 305)
g) 12	(0, 24, 38, 42, 48, 60, 78, 96, 104, 108, 120, 121, 144, 146)
h) 6	(3, 9, 12, 16, 18, 40, 42, 66, 70, 72, 82, 84, 100, 102, 108, 468, 472)
i) 14	(28, 56, 74, 80, 94, 140, 280, 294)
j) 16	(32, 64, 132, 160, 164, 204)

3. List the factors and multiples of 12:

Factors: _____

Multiples: _____

4. Apart from "0", how many multiples do all numbers have? _____

5. True or False:

a) 6 is a multiple of 3: ____ b) 12 is a multiple of 24: ____ c) 10 is a factor and multiple of 10: ____

Lowest Common Multiple LCM (*NSN)

1. List multiples of each number (about 5 for each to begin). Then, find the Lowest Common Multiple. *You may have to back to your lists to add more than 5 multiples for certain numbers in order to find the LCM.

a) 6: _____ LCM: _____

18: _____

b) 6: _____ LCM: _____

8: _____

c) 8: _____ LCM: _____

12: _____

d) 6: _____ LCM: _____

10: _____

e) 2: _____ LCM: _____

6: _____

12: _____

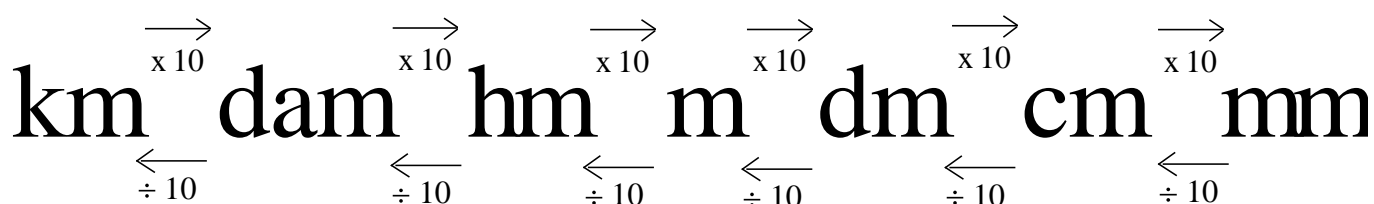
f) 3: _____ LCM: _____

6: _____

11: _____

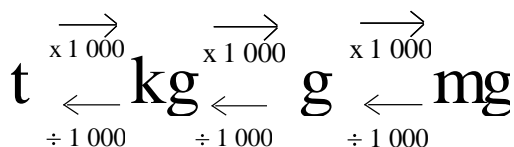
2. Three girls are waiting at the start line of the school track. At the whistle, the girls start walking. They are only allowed to stop walking when all three girls meet up again at the same area on the track, lined up again. It takes Abby 3 minutes to walk around the track, while it takes Debbie 4 minutes and Sarah 5 minutes. After how much time will all three girls stop walking?

Converting Units of Measure (NSN)



1. Using the above chart, convert the units of measure for length/distance:

- | | |
|---------------------------|---------------------------|
| a) 568mm = _____m | b) 4 458mm = _____cm |
| c) 0.95mm = _____cm | d) 1.45mm = _____dam |
| e) 5.6m = _____mm | f) 7km = _____m |
| g) 0.06km = _____cm | h) 3.04hm = _____dm |
| i) 0.005dam = _____mm | k) 20m = _____cm |
| l) 20m = _____km | m) 0.004dam = _____cm |
| n) 50 000mm = _____m | o) 431 560cm = _____km |
| p) 40.05cm = _____hm | q) 9.9dam = _____hm |
| r) 30 000 000 cm = _____m | s) 0.000 002dam = _____mm |



2. Using the above chart, convert the units of measure for mass/weight:

- | | |
|---------------------------|---------------------------|
| a) 5 t = _____kg | b) 7.4kg = _____mg |
| c) 1.4 kg = _____mg | d) 0.007t = _____kg |
| e) 43 000 000mg = _____kg | f) 600 000 000mg = _____t |
| g) 35 000 g = _____t | h) 6.43kg = _____mg |
| i) 0.007 g = _____mg | j) 0.8mg = _____kg |

Problem Solving Involving Unit of Measure Conversions (NSN)

1. If Swiss cheese is sold at \$15.50 per kilogram, how much is it for 200g?

2. If grapes are sold at \$3.99 per kilogram, how much is it for 150g?

3. What is the best bargain? Option A: 400g of Ham A for \$5.00

Option B: 0.3kg of Ham B for \$3.80

4. Last night, Samantha walked 4.2km and John walked 56 000cm.

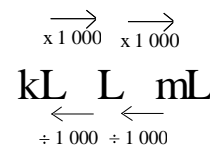
a) Who walked more?

b) How much more?

5. Using the conversion chart on the right, determine the better bargain:

Lemonade Brand A: 0.003 kL for \$4.99

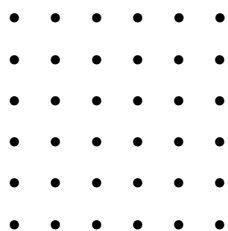
Lemonade Brand B: 9 000 mL for \$15.49



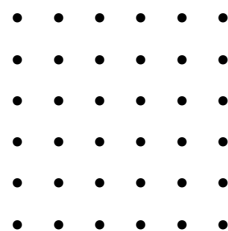
Area vs. Perimeter (Measure)

1. Using the dots provided below, draw a figure with a PERIMETER of:

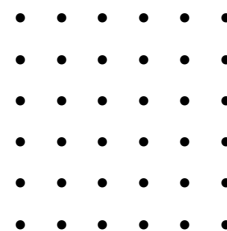
a) 10 units



b) 14 units

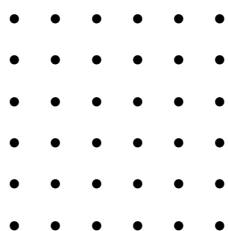


c) 20 units

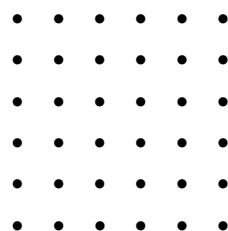


2. Using the dots provided below, draw a figure with an AREA of:

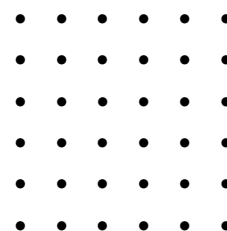
a) 7 units²



b) 6 units²

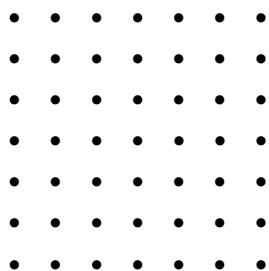


c) 9 units²

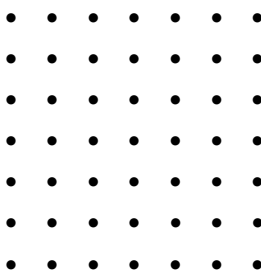


3. Using the dots provided below, draw a figure which satisfies all the stated conditions:

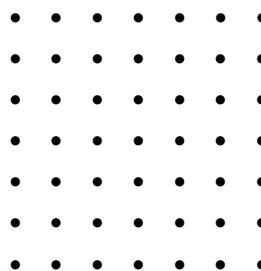
a) A square with a perimeter of 12 units.



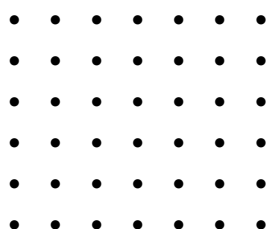
b) A rectangle with an area of 15 units² and a perimeter of 16 units.



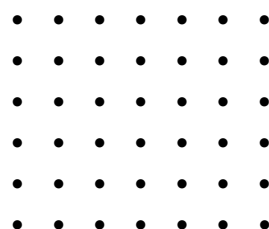
c) A rectangle with an area of 24 units².



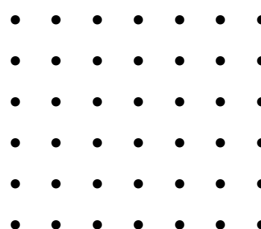
d) A decagon with perimeter of 20 units.



e) A right angle triangle with an area of 8 units²



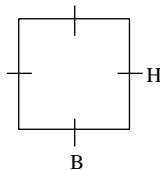
f) A rectangle with a perimeter of 18 units



Review - Area of Basic 2-D Polygons (Measure)

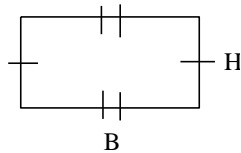
Area of a Square

$$A = BH$$



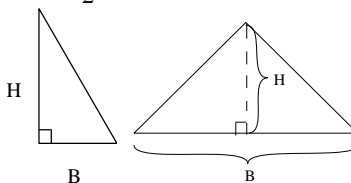
Area of a Rectangle

$$A = BH$$



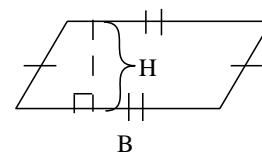
Area of a Triangle

$$A = \frac{BH}{2} \text{ and/or } A = BH \div 2$$



Area of a Parallelogram

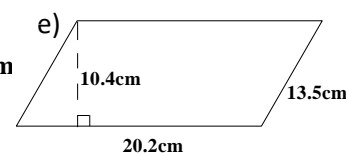
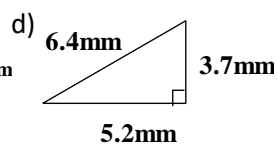
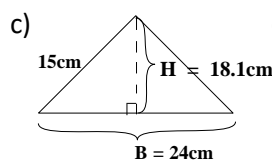
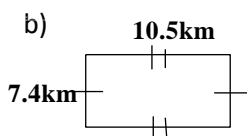
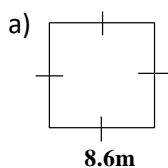
$$A = BH$$



1. Find the area of each shape. Follow the method indicated in class notes. Form is important!

Steps:

1. State formula
2. Identify values to be substituted
3. Substitute values into formula
4. Calculate
5. Insert correct unit of measure



2. Draw one parallelogram and one triangle, each having an area of 24cm^2 . Clearly indicate dimensions on your shapes and include calculations to support your choices.

Review – Area of Basic Shapes – Word Problems (Measure)

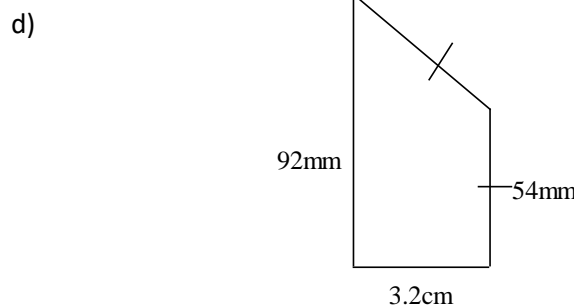
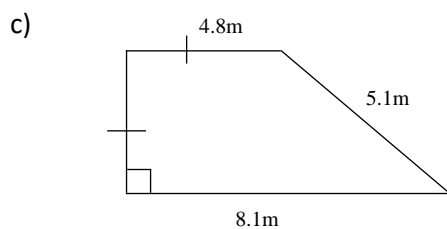
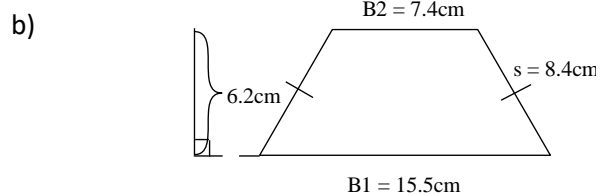
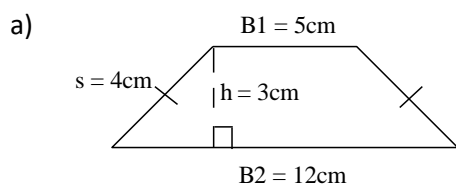
For each question, draw a corresponding diagram.

Then, find the answer using the correct form → 1) Identify Base & Height on the diagram, 2) state the appropriate formula, 3) substitute values into formula, 4) perform calculations working downward and align equal signs on the left and 5) insert correct unit of measure.

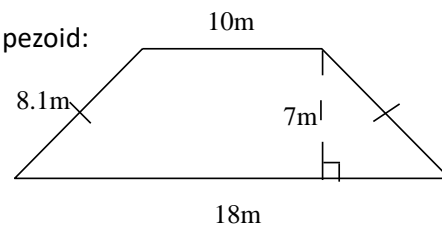
- a) Find the area of a square where each side is 19.72cm.
- b) An isosceles triangle has a 15cm base and its height is 14cm. What is the area of this triangle?
- c) Which has the larger area? 1) A square where each side is 9cm or 2) a rectangle whose dimensions are 12cm x 7cm?
- d) A Canadian football field is roughly 110 meters long including end zones and 52 meters wide. What is the area of the field?
- e) A flag has a 22cm base and its height is 48cm. What is the combined area of both sides?

Area of a Trapezoid (Measure)

1. Find the perimeter and the area of the following trapezoids:

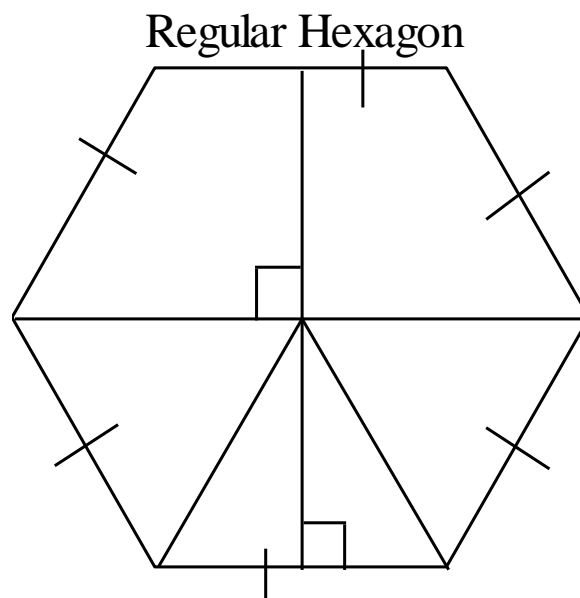


2. Show two different ways to calculate the area of the following trapezoid:



Area of Composite Shapes (*Measure)

1. EXPLAIN how you could calculate the area of the following regular hexagon in two different ways. Use a ruler to take the needed measurements. Round your measurements to the nearest tenths.



2. Calculate the area of the regular hexagon using two different methods. You will need to measure your needed dimension.

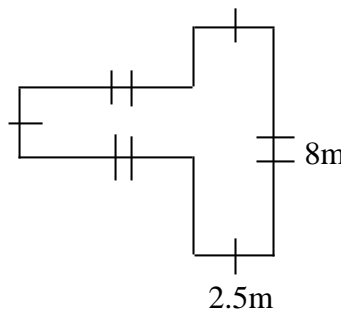
Method 1

Method 2

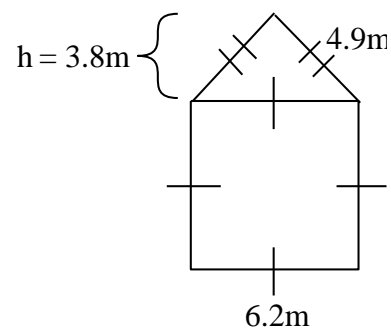
Area of Composite Figures (*Measure)

1. Calculate the area of the following composite figures:

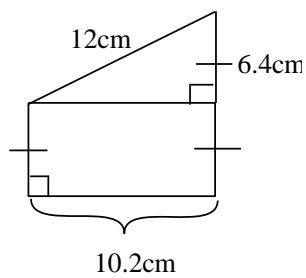
a)



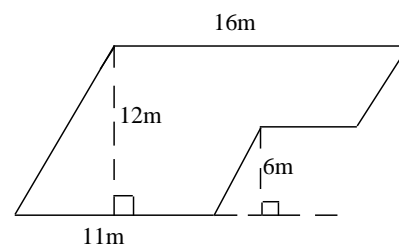
b)



c)



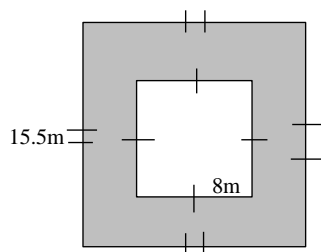
d)



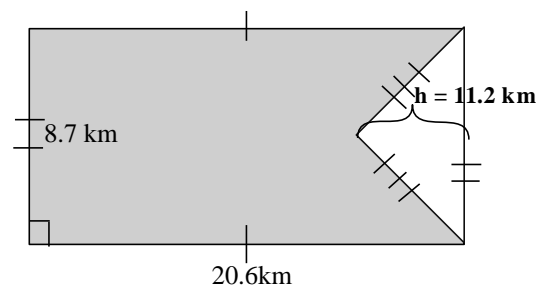
Area of Composite Figures (*Measure)

1. Calculate the area of the following shaded figures.

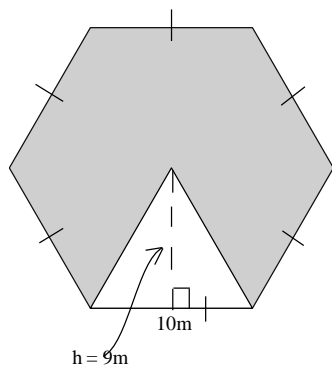
a)



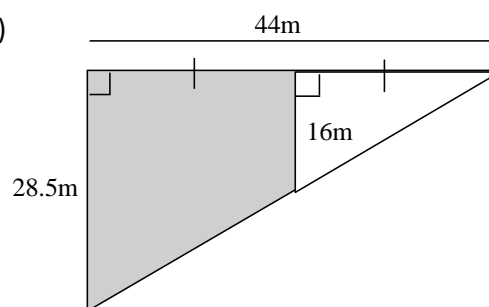
b)



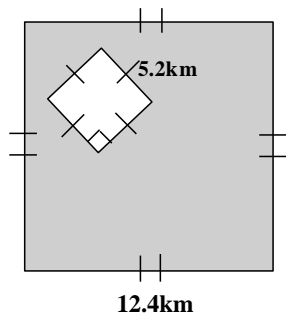
c)



d)



e)

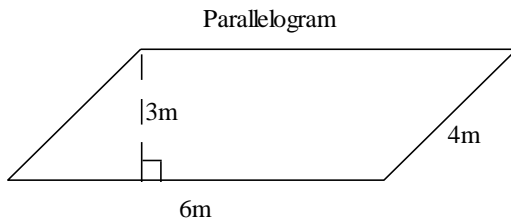


Converting Units of Measure of Area (NSN & •Measure)

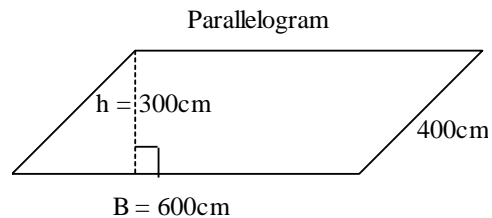
1. a) What do you think the conversion is? $18\text{m}^2 = \underline{\hspace{2cm}}\text{cm}^2$?
Explain how you calculated your answer:

- b) Calculate the area of the following figures, twice. Notice that these are congruent (exactly the same) parallelograms, but we used two different units of measure.

Area in meters:



Area in centimeters:



- c) Now that you have done the calculation, was your calculation in a) correct?

CONCLUSION: To convert units of measure of area, we must double what we would have done (or hopped) in the linear/ 1^{st} dimension (see Worksheet 27)

2 hops! 2 hops! 2 hops! 2 hops! 2 hops! 2 hops!

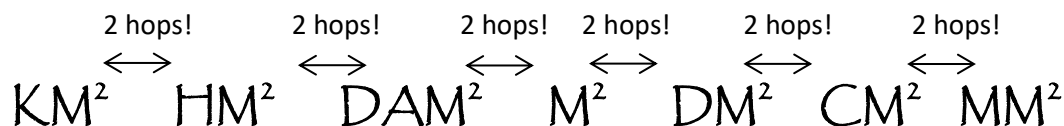
\longleftrightarrow \longleftrightarrow \longleftrightarrow \longleftrightarrow \longleftrightarrow \longleftrightarrow

KM^2 HM^2 DAM^2 M^2 DM^2 CM^2 MM^2

- d) Convert the following:

- 1) $6\text{m}^2 = \underline{\hspace{2cm}}\text{cm}^2$ 2) $1.7\text{m}^2 = \underline{\hspace{2cm}}\text{mm}^2$
3) $44\,000\,000\text{mm}^2 = \underline{\hspace{2cm}}\text{cm}^2$ 4) $123\,000\,000\,000\text{cm}^2 = \underline{\hspace{2cm}}\text{km}^2$

Converting Units of Measure of Area (NSN & Measure)



1. Using the above chart, convert the units of measure for area:

- a) $568\,000\text{mm}^2 =$ _____ m^2 b) $458\,000\text{mm}^2 =$ _____ cm^2
 c) $0.95\text{cm}^2 =$ _____ mm^2 d) $145\,000\text{mm}^2 =$ _____ dm^2
 e) $5.6\text{m}^2 =$ _____ mm^2 f) $7\text{km}^2 =$ _____ m^2
 g) $0.06\text{km}^2 =$ _____ cm^2 h) $304\text{hm}^2 =$ _____ dm^2
 i) $0.005\text{dam}^2 =$ _____ m^2 k) $20\text{m}^2 =$ _____ cm^2
 l) $50\text{m}^2 =$ _____ km^2 m) $0.004\text{dam}^2 =$ _____ cm^2
 n) $50\,000\text{mm}^2 =$ _____ m^2 o) $431\,560\,000\text{cm}^2 =$ _____ km^2
 p) $45\,000\text{cm}^2 =$ _____ hm^2 q) $9.9\text{dam}^2 =$ _____ hm^2
 r) $30\,000\,000\text{cm}^2 =$ _____ m^2 s) $0.000\,000\,002\text{dam}^2 =$ _____ cm^2

2. Go back to Worksheet 34 and copy the correct answers for the area of the shapes in question 1 a) b) c) d). Then, convert each value to the indicated area unit of measure:

- a) _____ $\text{m}^2 \rightarrow$ _____ km^2
 b) _____ $\text{m}^2 \rightarrow$ _____ cm^2
 c) _____ $\text{cm}^2 \rightarrow$ _____ km^2
 d) _____ $\text{m}^2 \rightarrow$ _____ mm^2

3. True or false? If false, make the correction.

- a) 56.7m is equal to $5\,670\text{cm}$: _____ b) 4.5cm^2 is equal to $0.004\,5\text{m}^2$: _____
 c) $55\,000\,000\text{mm}^2$ is equal to 55m^2 : _____ d) 3.06km is equal to $30\,600\text{m}$: _____
 e) 0.007m^2 is equal to 70cm^2 : _____ f) $0.000\,006\text{km}^2$ is equal to $60\,000\text{cm}^2$: _____

Evaluating Algebraic Expression Using Substitution – (*Patt & Alg)

1. Evaluate each of the expression by substituting the given values. Don't forget to use BEDMAS!

a) $n + 5 + n$, if $n = 4$

b) $(2a) + (5 - a)$, if $a = 3$

c) $(b)(b) - 2(b)$, if $b=5$

d) $(a + 5) \div (a - 5)$, if $a = 6$

e) $m - (m - 4) - m$, if $m=4$

f) $(c)(c) + (c \div 4)$, if $c = 8$

g) $(y - 15) \div (y \div 4)$, if $y = 20$

h) $2(t - 9) + 7$, if $t = 10$

i) $h + h + 2h$, if $h = 2$

j) $(m)(m) - m + (m)(m)$, if $m = 2$

k) $2p - (5 - p) - 4$, if $p = 4$

l) $(p)(p) - 2p$, if $p=2$

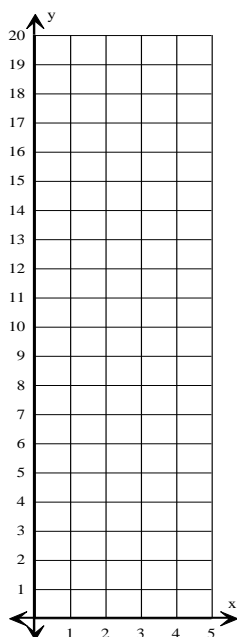
m) $(2a + 9 - a) \div (a + 1)$, if $a = 3$

n) $(5b - 3 \cdot 5) \div (5 + b \div 5)$, if $b = 10$

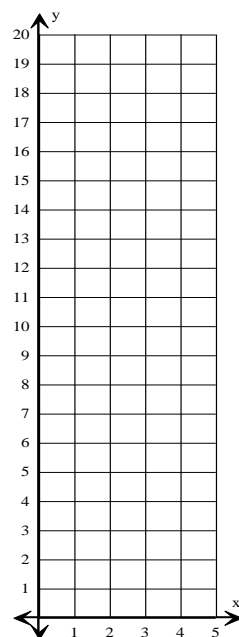
Algebraic Expressions/Equations & Tables (•Patterning & Algebra)

1. a) Complete the tables for each corresponding algebraic equation. Don't forget to show your calculations.
- b) Chart your result on the Cartesian Plane

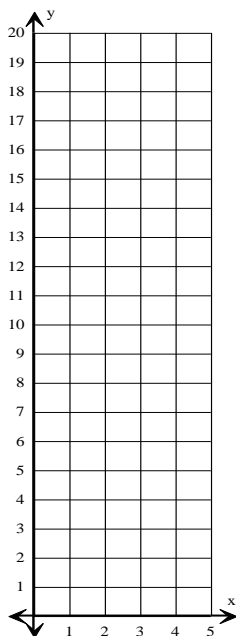
$y = x + 4$	
x	y
1	
2	
3	
4	
5	



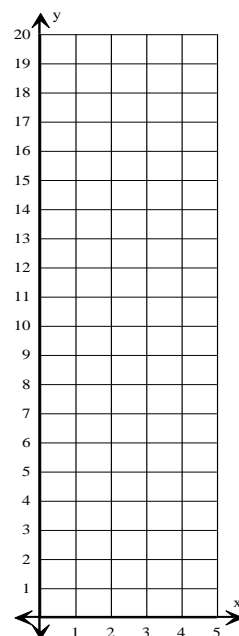
$y = 2x + 2$	
x	y
1	
2	
3	
4	
5	



$y = 3x - 2$	
x	y
1	
2	
3	
4	
5	



$y = 4x - 1$	
x	y
1	
2	
3	
4	
5	



Algebraic Expressions (*Patterning & Algebra)

1. Evaluate each expression for the given values of “x”:

a) $3x + 3$, for the values of $x = 1, 2, 3$ and 4 .

Include calculations below!

Answer: _____

b) $x \div 3$, for the values of $x = 3, 6, 9$ and 12 .

Include calculations below!

Answer: _____

c) $15 - 2x$, for the values of $x = 1, 3, 5$ and 7 .

Include calculations below!

Answer: _____

d) $20 + 3x - 2$, for the values of $x = 1, 2, 4, 5$ and 7 .

Include calculations below!

Answer: _____

e) $5x \div 5 - 2$, for the values of $x = 2, 3, 4, 8$ and 10 .

Include calculations below!

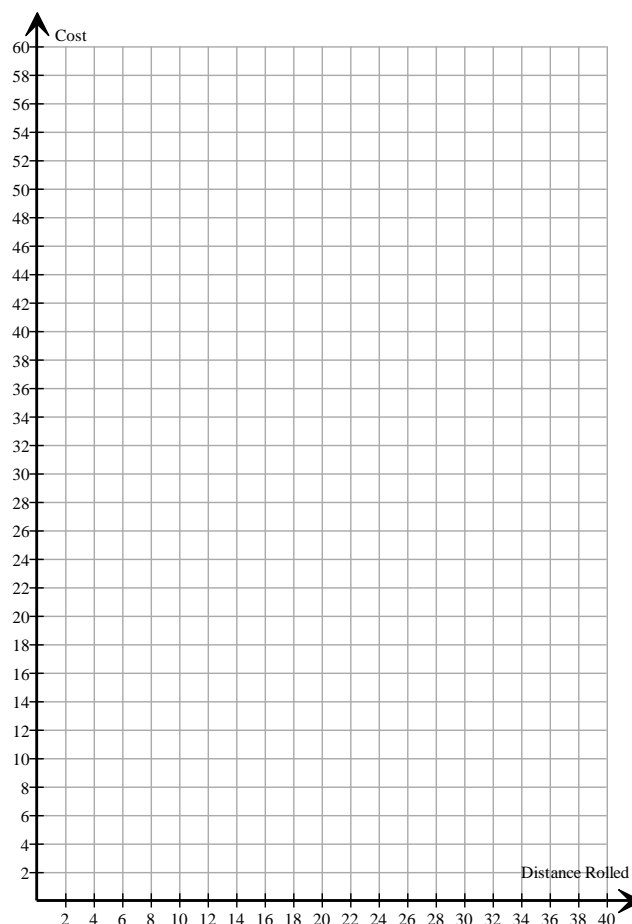
Answer: _____

Algebraic Expressions/Linear Relationships (Patterning & Algebra)

1. A taxicab has a base fare of \$4. Once rolling, it costs an extra \$1.25 per km rolled.
- a) If a client rolls the following distances, what will the cost be?
- 6 km: _____ - 15 km: _____
- b) Create an algebraic expression that calculates the amount owed by a client for any possible distance:
- c) Complete the table below,
(Cost to ride for 3km, 5km, 10km and 20km)
- d) Chart your results from c) in the table below:
- Title: _____

Distance in km	Cost \$
3	
5	
10	
20	

- e) Using the chart, what would you estimate the cost would be for a distance of 40km?
- f) Can you use your algebraic expression from question b) to find the cost for a distance of 40km?



Algebraic Expressions/Linear Relationships (Patterning & Algebra)

1. A vehicle's value decreases as it ages. Car A is worth \$20 000 brand new and then depreciates \$ 1200 each year thereafter.

a) What is Car A's value after:

- 3 years?

- 7 years?

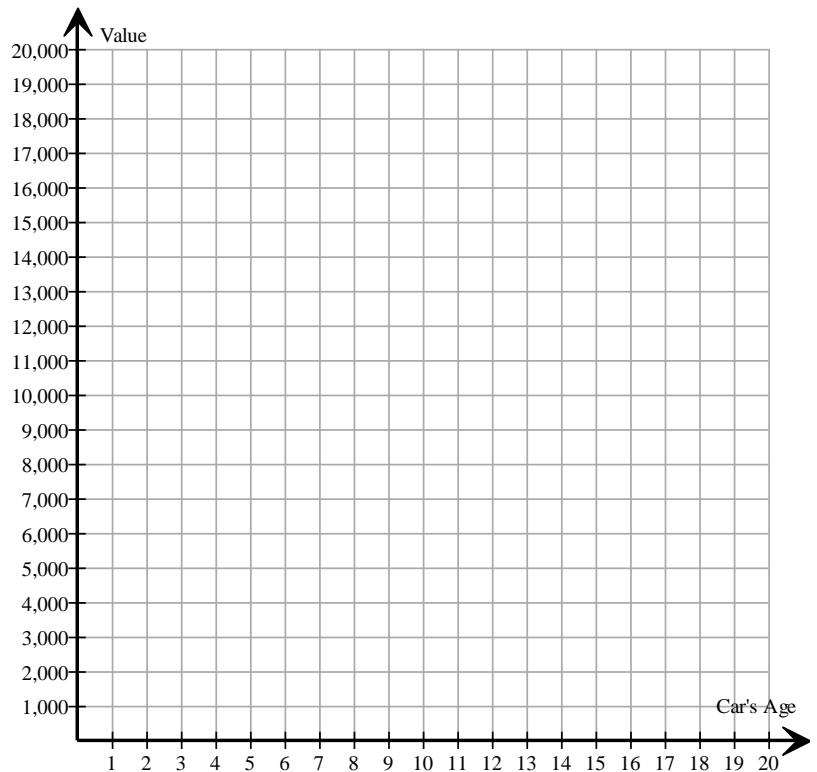
b) Create an algebraic expression that calculates Car A's value in terms of its age.

c) Complete the table below,
(Value of Car A after #
of years)

Age	Value \$
0	
1	
2	
5	
7	

d) Chart your results from c) in the table below:

Title: _____



e) Using the chart, how old is the car
when it is worth:

- \$ 8 000?

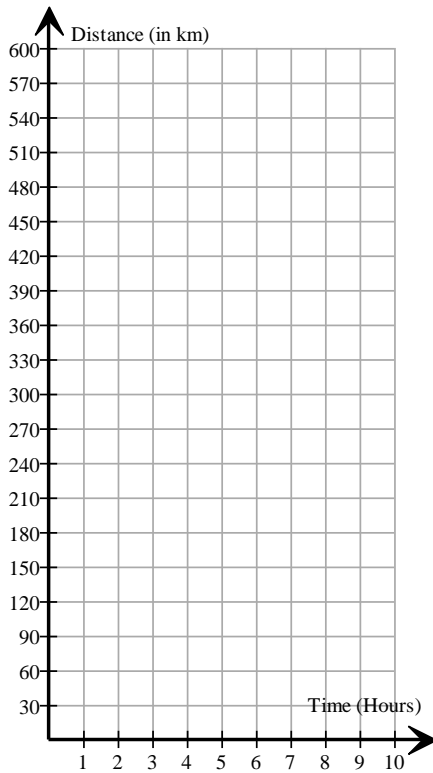
- \$ 5 000?

- \$ 2 000?

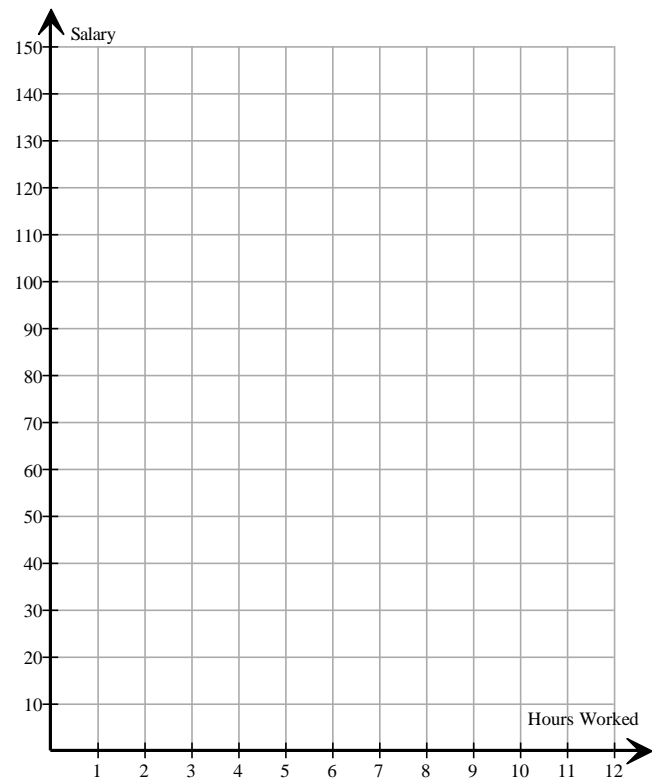
f) Using the chart, when will the car
be worthless?

Linear Relationships (*Patterning & Algebra)

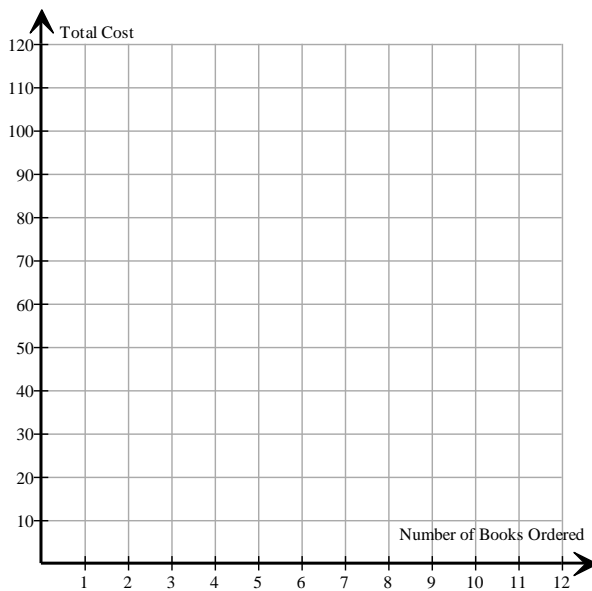
1. A car rolls at 60km/h.
Chart the corresponding graph.



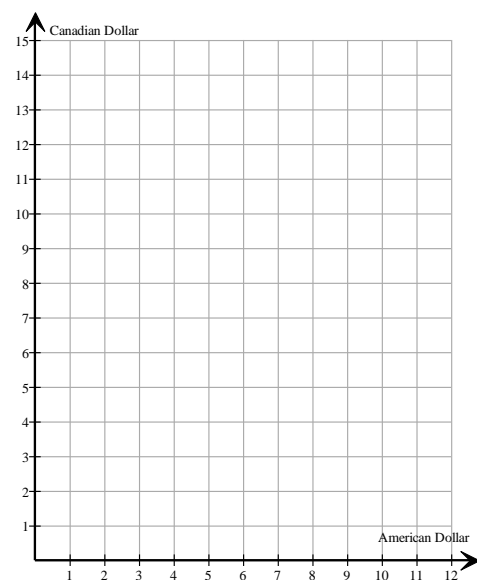
2. A cashier earns \$12.50/h. Chart the salary grid.



3. EBay charges \$9 per book and a shipping fee of \$10. Chart how much it would cost to purchase & send up to 10 books?



4. The exchange rate \$1.20 Canadian Dollars to buy one American Dollar. Chart how much it would cost to buy anywhere from 1 to \$10 US Dollars.



Finding the General Term/Alg Expression of a Sequence (*Patterning & Algebra)

1. Determine the General Term/Algebraic Expression of each sequence of numbers below:

a) 9, 14, 19, 24, 29, ...

x	y
Term #	Term Value
1	9
2	14
3	19
4	24
5	29

* Given that the pattern rule is _____, “_____” will appear in the general term.

** The “y” value for Term “0” is: _____

∴ the corresponding general term/expression is: _____

Tests: _____

b) 14, 16, 18, 20, 22,

x	y
Term #	Term Value
1	14
2	16
3	18
4	20
5	22

* Given that the pattern rule is _____, “_____” will appear in the general term.

** The “y” value for Term “0” is: _____

∴ the corresponding general term/expression is: _____

Tests: _____

c) 2, 6, 10, 14, 18, ...

x	y
Term #	Term Value
1	2
2	6
3	10
4	14
5	18

* Given that the pattern rule is _____, “_____” will appear in the general term.

** The “y” value for Term “0” is: _____

∴ the corresponding general term/expression is: _____

Tests: _____

d) 4, 13, 22, 31, ...

x	y
Term #	Term Value
1	
2	
3	
4	
5	

* Given that the pattern rule is _____, “_____” will appear in the general term.

** The “y” value for Term “0” is: _____

∴ the corresponding general term/expression is: _____

Tests: _____

e) 2, 4, 6, 8, ...

x	y
Term #	Term Value
1	
2	
3	
4	
5	

* Given that the pattern rule is _____, “_____” will appear in the general term.

** The “y” value for Term “0” is: _____

∴ the corresponding general term/expression is: _____

Tests: _____

f) 5, 8, 11, 14, ...

x	y
Term #	Term Value
1	
2	
3	
4	
5	

* Given that the pattern rule is _____, “_____” will appear in the general term.

** The “y” value for Term “0” is: _____

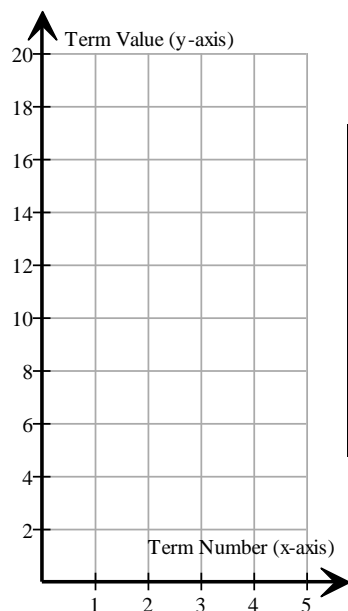
∴ the corresponding general term/expression is: _____

Tests: _____

Charting Sequences (Patterning & Algebra)

1. Using the following patterns, determine the General Term/Alg Exp, then chart the data.

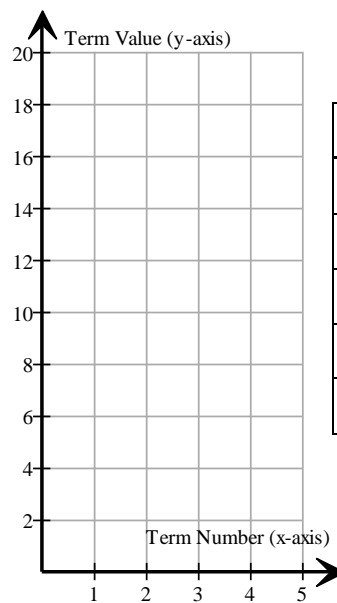
a) 5, 8, 11, 14, ...



T #	T.V.
0	
1	
2	
3	
4	

General Term/Alg Exp: _____

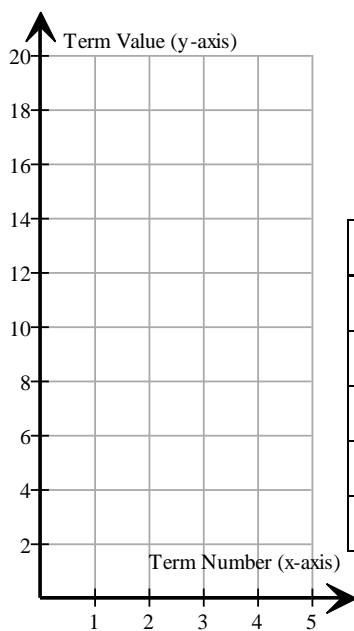
b) 3 3, 3 3 3 3 3, 3 3 3 3 3 3 3 3, ...



T #	T.V.
0	
1	
2	
3	
4	

General Term/Alg Exp: _____

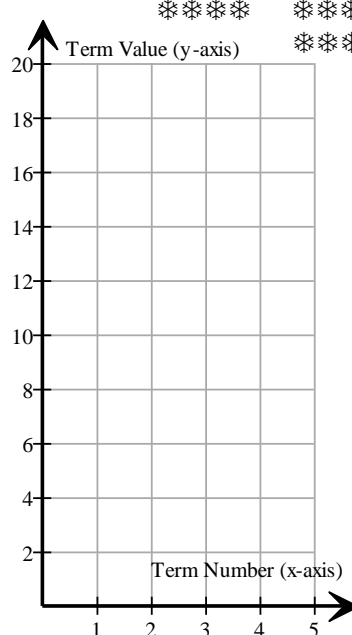
c) ☆ ☆, ☆ ☆ ☆ ☆, ☆ ☆ ☆ ☆ ☆ ☆, ...



T #	T.V.
0	
1	
2	
3	
4	

General Term/Alg Exp : _____

d) ☆ ☆ ☆ ☆ ☆ ☆, ☆ ☆ ☆ ☆ ☆ ☆, ☆ ☆ ☆ ☆ ☆ ☆, ...



T #	T.V.
0	
1	
2	
3	
4	

General Term/Alg Exp: _____

Finding the General Term/Alg Expression of a Sequence (*Patterning & Algebra)

1. What is the General Term/Algebraic Expression of the following sequences:

a) ✂✂✂, ✂✂✂✂✂✂, ✂✂✂✂✂✂✂✂✂✂, ✂✂✂✂✂✂✂✂✂✂✂✂, ...

b) 🖐🖐🖐🖐🖐, 🖐🖐🖐🖐🖐🖐🖐, 🖐🖐🖐🖐🖐🖐🖐🖐🖐, 🖐🖐🖐🖐🖐🖐🖐🖐🖐🖐, ...

c) 8, 88888, 8888888888, 888888888888888, ...

d) 10, 20, 30, 40, ...

e) "A sequence begins at 7, then increases by 3 to find each next term".

f) "Start at 0. Then, add 4 to find each subsequent term."

g) ↑↑↑↑↑↑, ↑↑↑↑↑↑↑↑, ↑↑↑↑↑↑↑↑↑↑, ↑↑↑↑↑↑↑↑↑↑↑↑, ...

h) 5, 16, 27, 38, ...

General Terms, Charts, Graphs, Descriptions (Patterning & Algebra)

1. Using different colors (blue, red, green, yellow), match the sets that go together:

General Terms

$2x + 4$

$4x$

$3x - 1$

$x + 3$

Table of Values

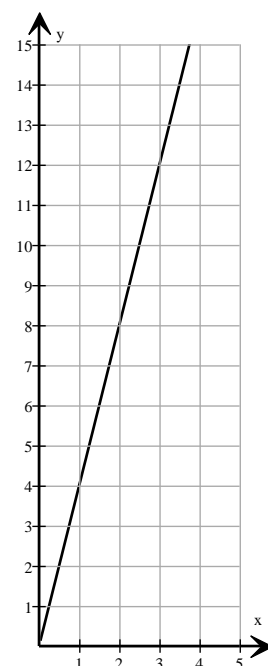
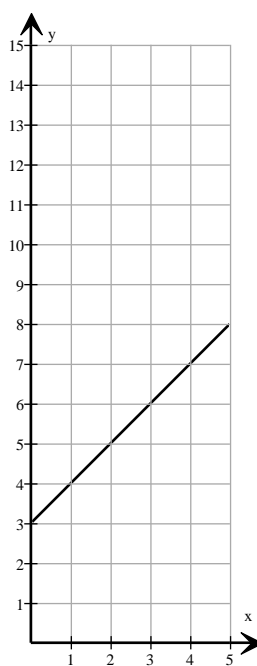
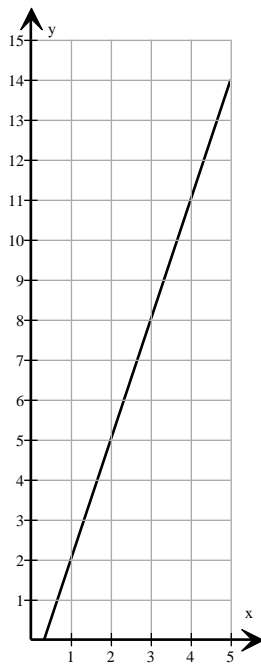
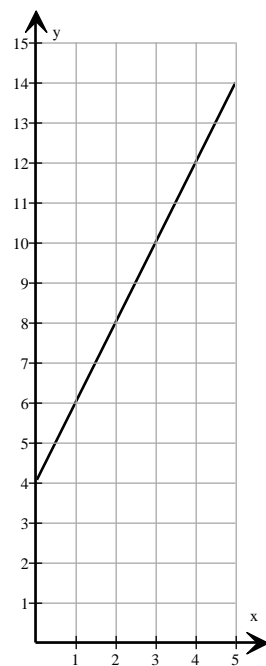
Term #	Term Value
1	4
2	5
3	6
4	7
5	8

Term #	Term Value
1	6
2	8
3	10
4	12
5	14

Term #	Term Value
1	4
2	8
3	12
4	16
5	20

Term #	Term Value
1	2
2	5
3	8
4	11
5	14

Graphs



Description

- Start at 2, then increase by 3 to find the next term.
- A sequence starts at 4 then increases by 4 to find the next term.
- Start at 6, then add two to find the next term.
- A sequence is 4, 5, 6, 7, 8, ...

Circle Graphs - (DMP)

A Circle Graph (or Pie Graph) is used to show comparisons between each part of a whole amount. When building a circle graph, you need to know how to turn a fraction into a percent (numerator \div denominator \times 100). When performing calculations to build your circle graph, you will be rounding to the nearest percent and to the nearest degree.

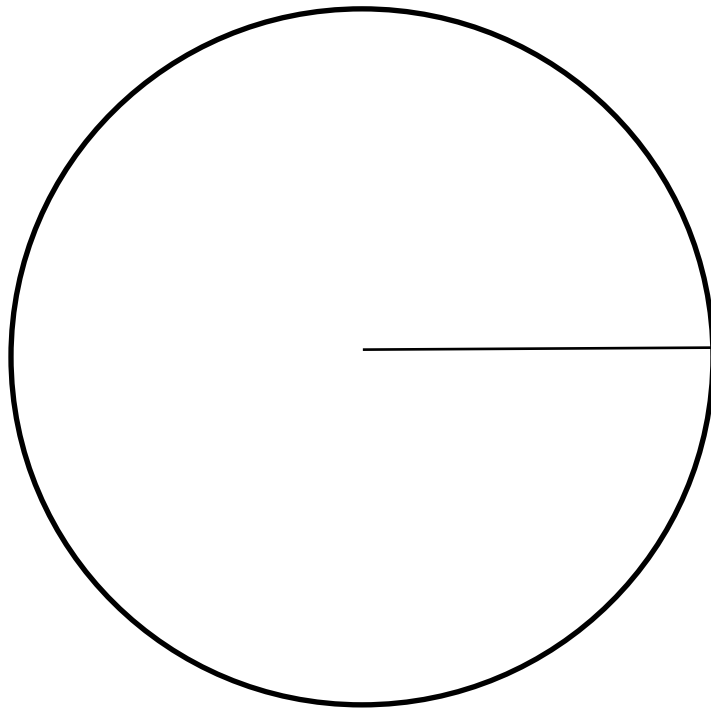
Month of September Spending

Item	Amount	Fraction	Percent %	Percent Rounded	$\times 3.6$	Degrees (rounded)
Clothes	\$60	60/135				
Video Games	\$40	/				
Junk Food	\$10	/				
Presents	\$25	/				

Total: \$135

_____ (title?)

Legend

☐
☐
☐
☐


Circle Graphs - (DMP)

You will be collecting data from the students in your class about their favorite color. Step 1: As a group, decide on 5-6 categories/choices of color. Write the choices in the 1st column of the table below. Step 2: Record each students' favorite color in the "Tally" column. Use the "||||" method. Step 3: Calculate the frequency of each answer. For example, |||| is a frequency of "5". Step 4: Create a corresponding fraction for each color. Step 5: Calculate the corresponding percent and degrees for each color.

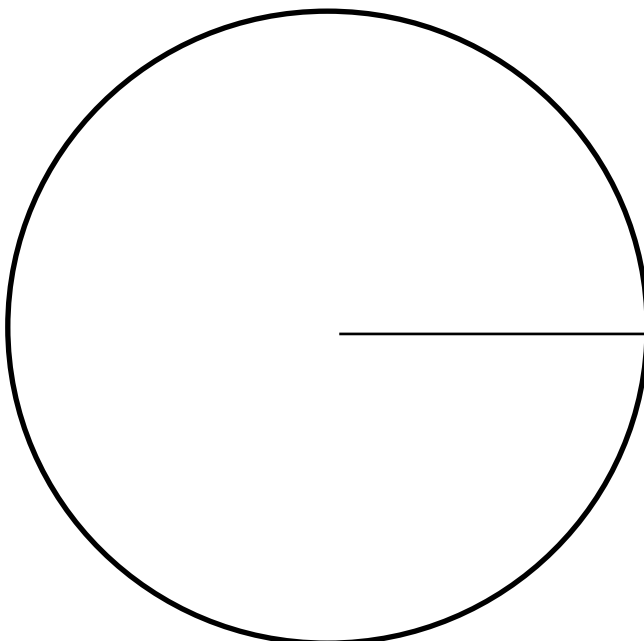
Favorite Color of Students in Class _____

Color	Tally	Frequency	Fraction	Percent %	X 3.6	Degrees

Total: _____

_____ (Title)

Legend

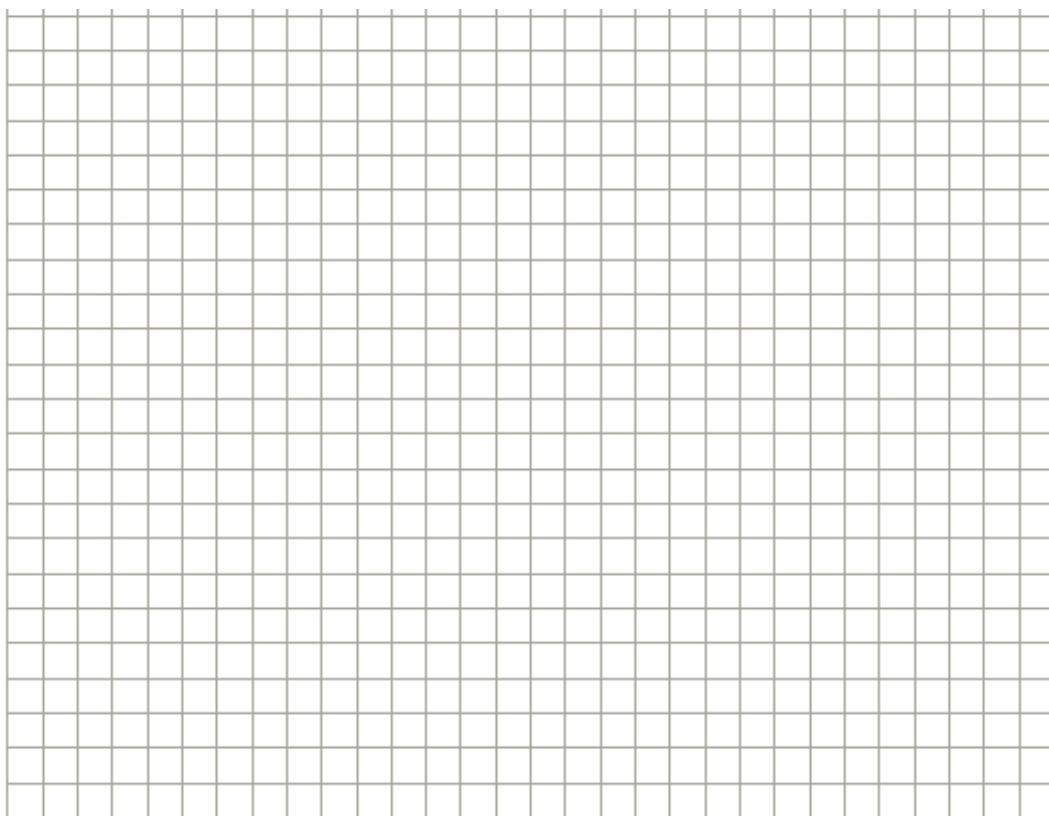


The Bar Graph - (DMP)

* A Bar Graph uses **CATEGORIES** on the horizontal (x-axis) and **HAS SPACES** between the vertical bars*

Using the data you collected on your classmates' favorite colors (worksheet 49), build a Bar Graph.

- Hints:
- Your bars must be of equal width and must have consistent space between bars (see bar graph on worksheet 53 titled "Tardiness in Class A").
 - Place the Categories of Color on the X – axis and the Frequency of each color on the Y-axis.
 - You must have a main title, and sub titles on the X-axis (horizontal) and the Y-axis (vertical).
 - Your y axis must be consistently graduated (numbered) and you bars must be equally spaced on the x-axis.
 - You must use a ruler to construct your bars. Your graph must be neat & tidy!



The Histogram ~ (DMP)

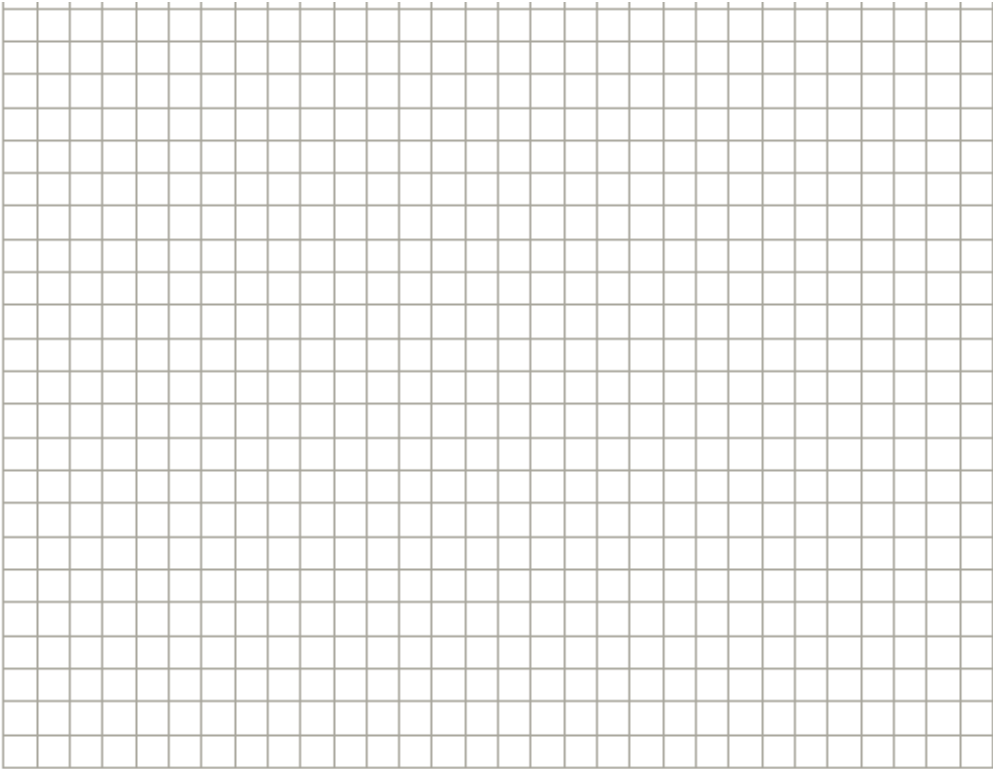
* A Histogram uses **INTERVALS** on the horizontal (x-axis) and has **NO SPACES** between the vertical bars*

Here is the data regarding the amount of time grade 9 students spent studying for their final exam:

1.5 hours, 2.5 hours, 0.5 hours, 0 hour, 4.75 hours, 5.5 hours, 2.25 hours, 1.5 hours, 2.75 hours, 0.75 hours, 0.25 hours, 1.5 hours, 2.5 hours, 3.75 hours, 4.5 hours, 5.75 hours, 3.5 hours, 2.25 hours, 2 hours, 1 hour, 3.25 hours, 4 hours, 5.5 hours, 3.75 hours, 3.25 hours, 2.5 hours, 1.75 hours, 0.5 hour, 5.25 hours, 3.5 hour, 2.25 hours, 3.75 hours.

Assignment: Place the values in a frequency chart then build a Histogram.

Interval of Time	Tally	Frequency



The Broken Line Graph ~ (DMP)

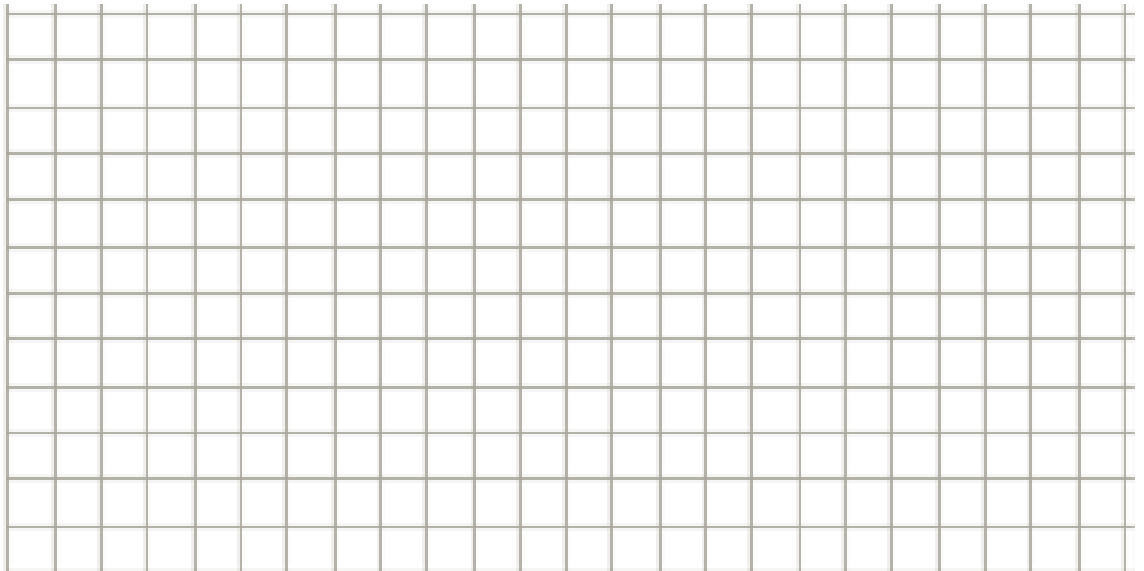
* A Broken Line Graph is used to represent data that changes over time *

Here is the data that indicates how much it costs, in Canadian dollars, to buy one American Dollar from Jan 2014 to Dec 2014. The values indicated are average monthly amounts.

Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
\$1.12	\$1.10	\$1.10	\$1.09	\$1.08	\$1.07	\$1.09	\$1.08	\$1.12	\$1.13	\$1.14	\$1.15

Build a Broken Line Graph to represent the data.

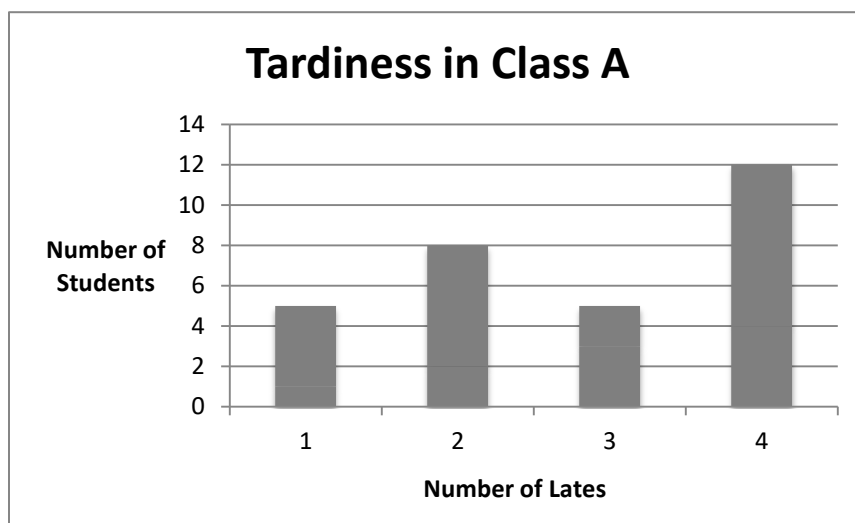
- Hints:
- The “Months” are to be located on the X-axis (horizontal).
 - The “Cost” is to be located on the Y-axis (vertical).
 - Both the X and Y axis need to be consistently graduated .
 - You need a main title and titles for both the X and Y axis.
 - Your points need to be joined by (broken) lines. Use a ruler.



- Questions:
- What is the data's range? _____
 - As a Canadian, which month would be the best to go shopping in the US? Why?

Reading Graphs – (DMP)

1. Answer the following questions below, using the information in the Bar Graph.



- a) How many students were included in the survey: _____
- b) What percentage of students were late three times? _____
- c) What percentage of students were late one or two times? _____
- d) Calculate the 3Ms. Show your work for median and mean.

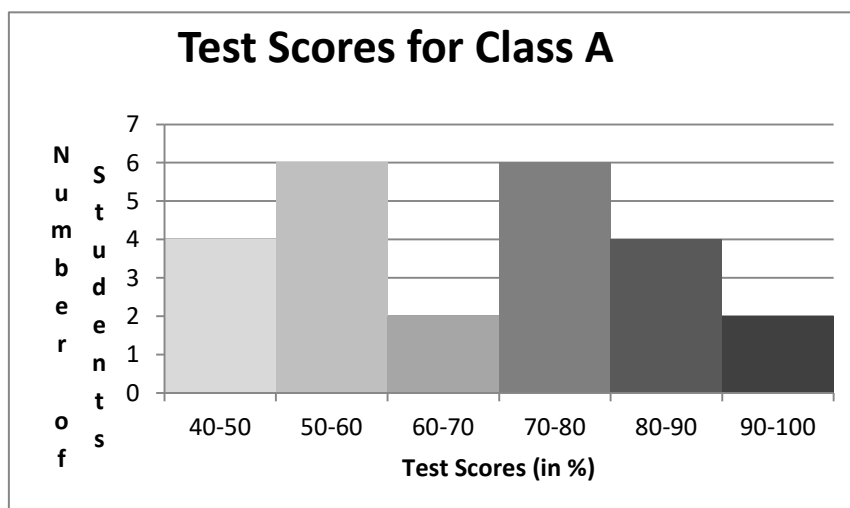
Mean:

Median:

Mode: _____

Reading Graphs – (DMP)

1. Answer the following questions below. Use the information in the Histogram.



- a) How many students were included in the survey (Hint: Write the number of students included in each bar and then find the sum of all the values inside the bars): _____
- b) For each interval, indicate the “mean value”. This is what you will be using as data for each student’s individual result (each student’s best estimated mark).
- 40-50 interval: _____ 70-80 interval: _____
- 50-60 interval: _____ 80-90 interval: _____
- 60-70 interval: _____ 90-100 interval: _____
- c) Make an ordered list indicating each students’ mark (best estimation):
- d) Using the above list, find the 3Ms:
- Mode: _____ Median: _____ Mean (show work): _____

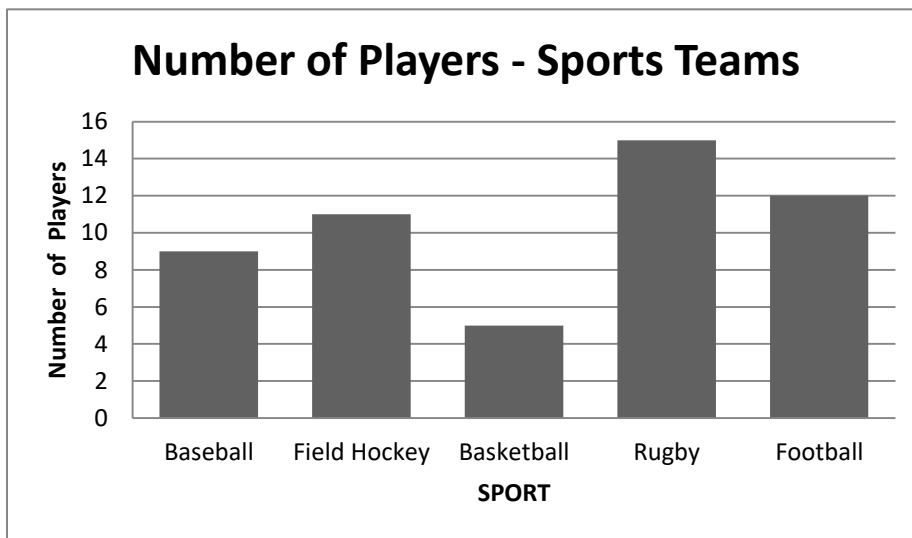
Reading Graphs Graphs ~ (DMP)

1. This stem & leaf plot shows the number of frost-free days in 20 Canadian cities.

Frost Free Days					
11	2	5	7		
12	1	3	6	8	
13	1	5	7	9	9
14	7	8	9		
15	1	1	5	6	7

- a) Find the Mean, Median and Mode of the data. Show your work/calculations.
- b) What is the range of data? _____
- c) How many cities have more than 155 frost-free days? _____

2. The BAR GRAPH below shows the number of players allowed to play each sport at one time.

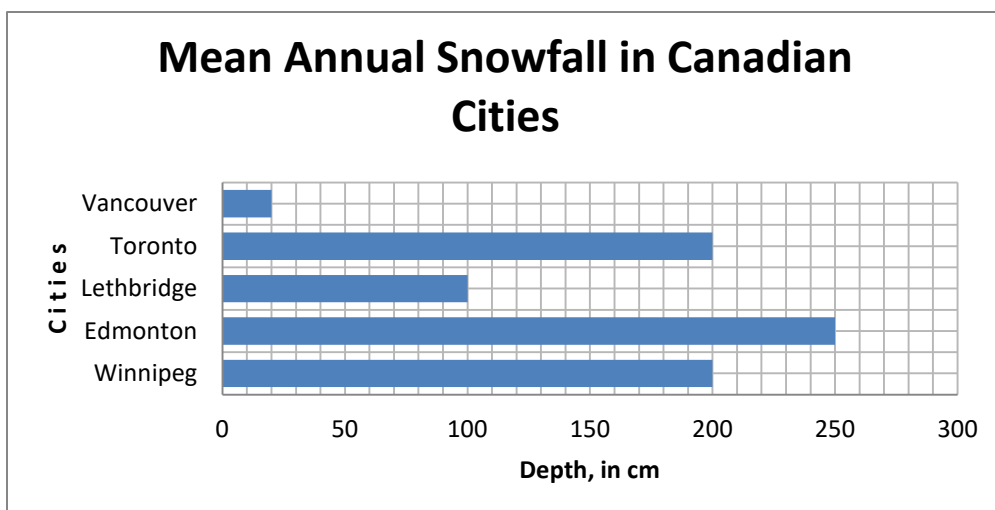


- a) What is the difference between Rugby and Basketball players? _____

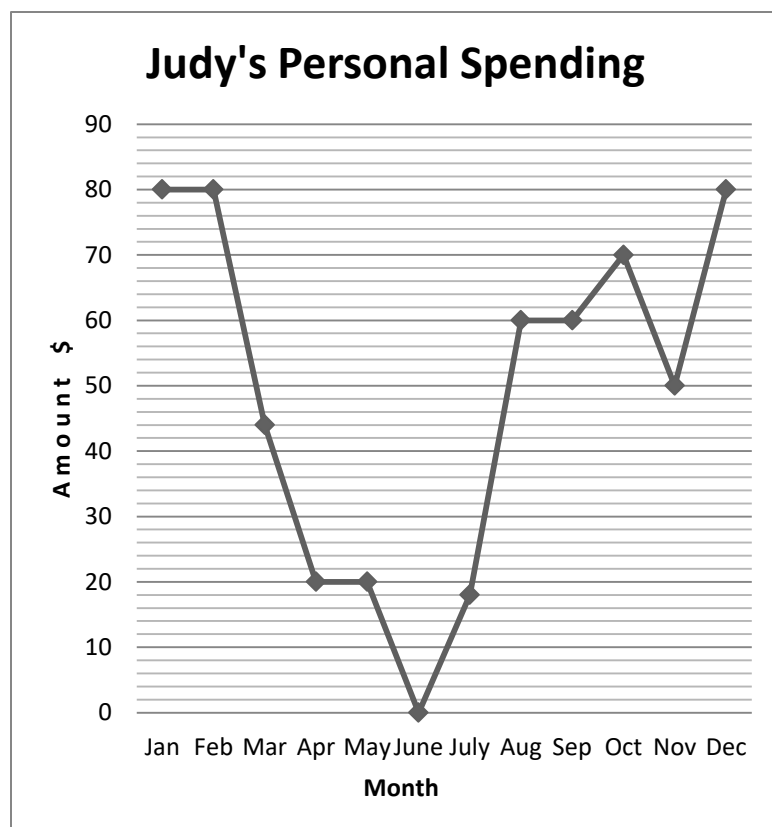
- b) Order the sports from the greatest to least amount of players:

- c) Suppose we doubled the Field Hockey players and tripled the Baseball players. What would be the difference in the amount of players between each team?

Reading Graphs - (DMP)



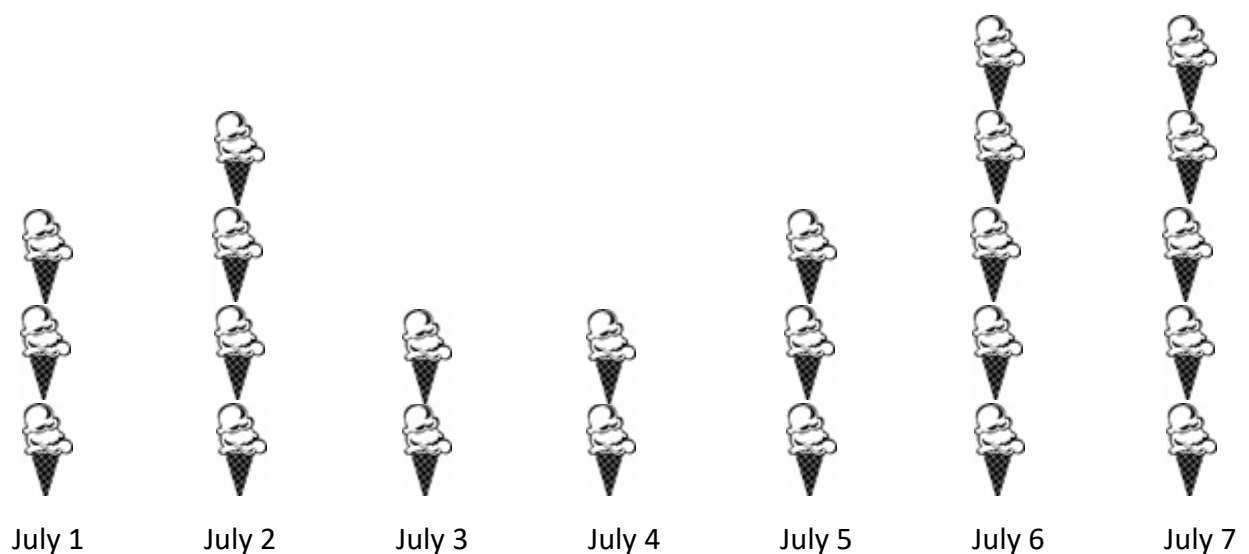
1. What is the total amount of snowfall in these five cities? _____
2. What percentage of the total snowfall does Toronto receive? _____
3. What is the mean amount of snowfall received by these five cities? _____



4. How much did Judy spend between the months of April and October (inclusively)? _____
5. What is Judy's mean monthly spending? _____
6. What is Judy's median monthly spending? _____
7. If we remove the first and the last month, by how much is the mean monthly spending affected? Show calculations below:

Graph Interpretation – (DMP)

ICE CREAM CONES SOLD (JULY 1 to JULY 7)

 = 2 cones


The **PICTOGRAPH** above shows the number of ice cream cones sold in a one week period in July. Using this graph, answer the questions below.

- During the given week, how many ice cream cones were sold? _____
- What was the best day of sales and what are possible reasons of this occurrence?

- July 6th sales amounted to what fractions of the week's sales? _____
- July 4th sales amounted to what percent of the week's sales? _____
- What is the difference in sales between July 7th and 1st? _____
- Why do you think sales were so poor on July 3rd and 4th?

- What is the total number of cones sold on July 5th and 6th? _____
- What percentage of cones were sold on July 5th and 6th? _____
- What percentage of cones were sold on July 2nd? _____

Representing Data (DMP)

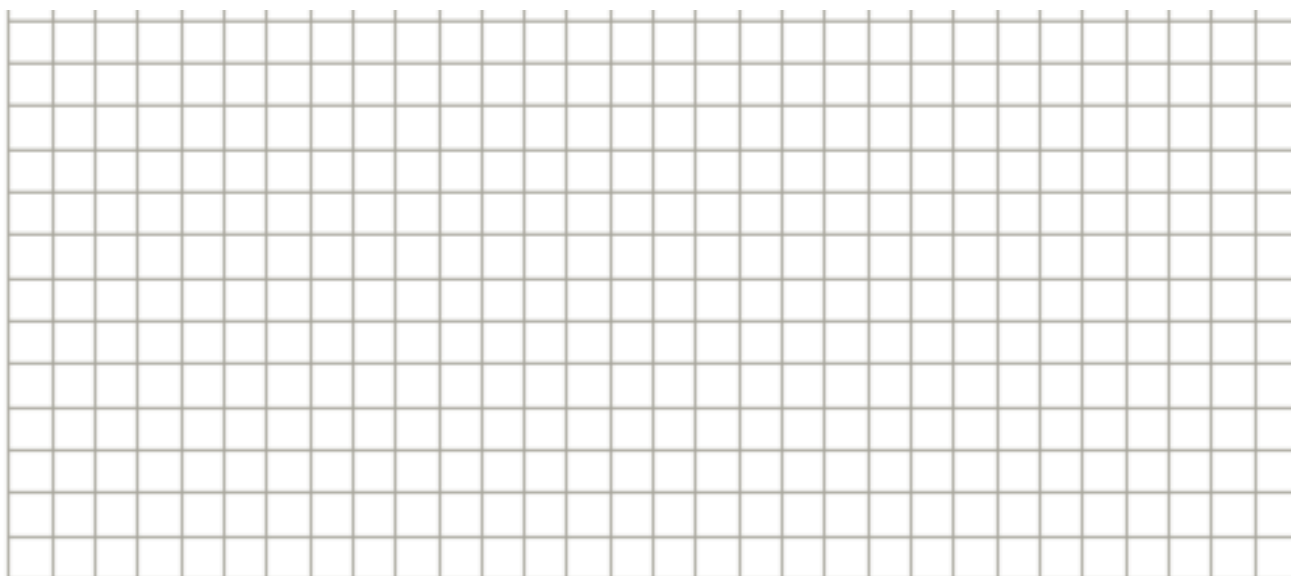
Go to the following website: <http://www.theweathernetwork.com/weather/historical-weather/caon0512>

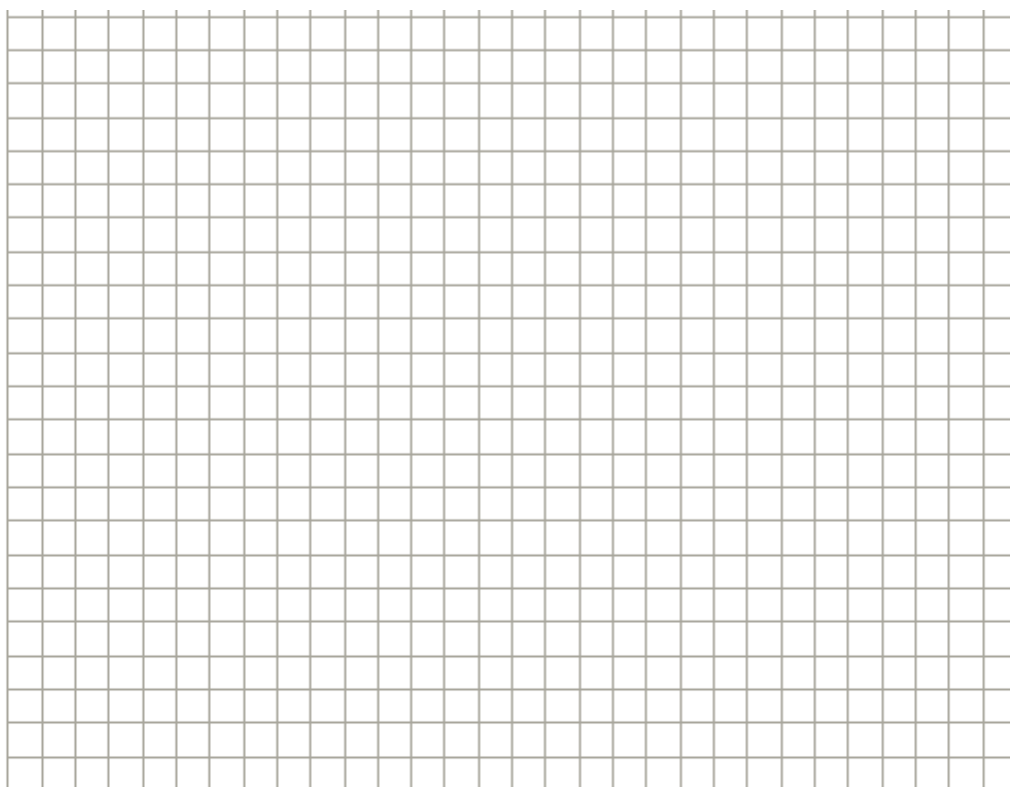
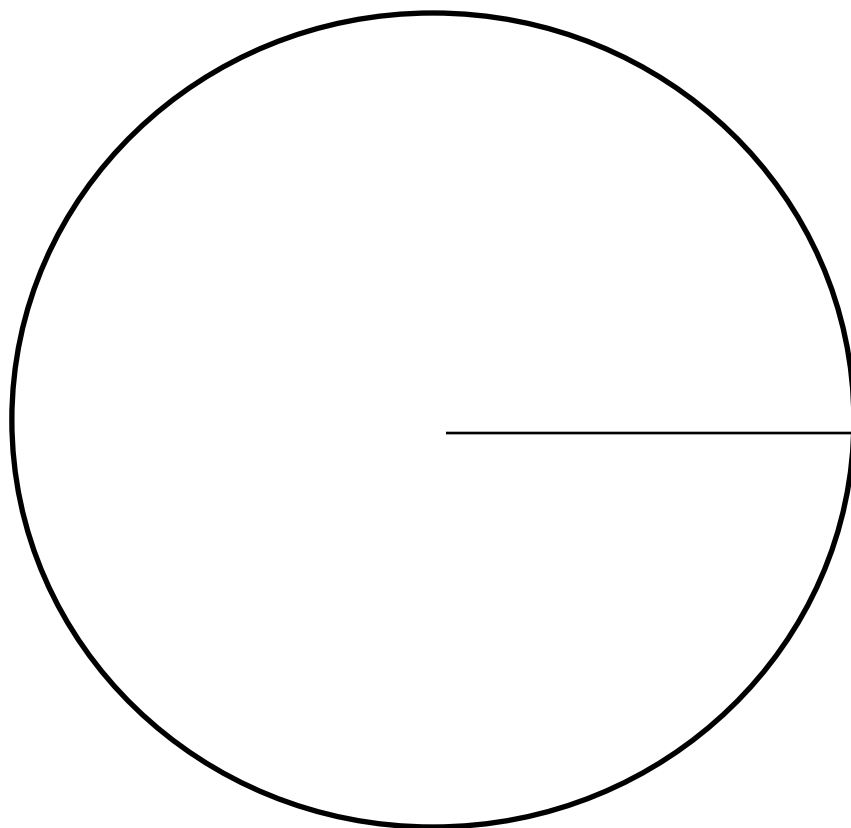
In the table below, record the “Max Temp” (maximum temperature) for Ottawa for the past month of November. Round the temperatures to the nearest degree Celcius.

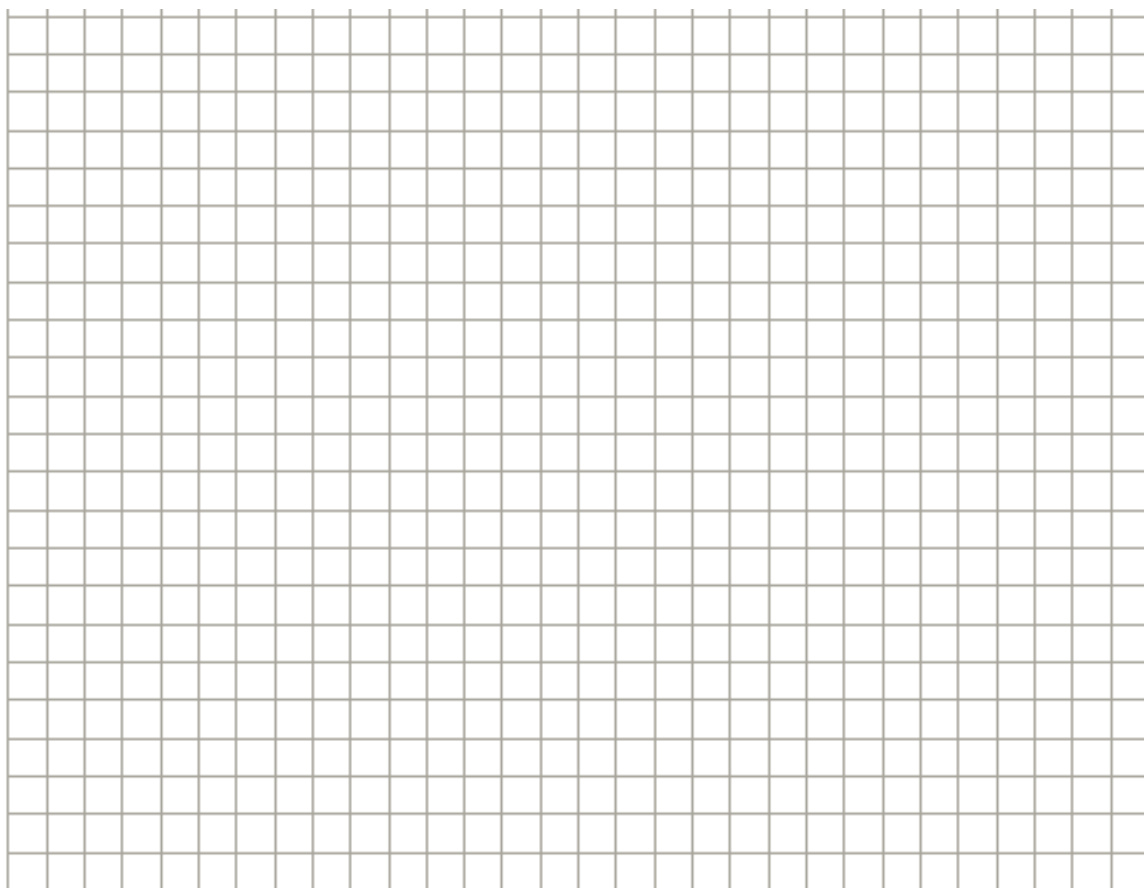
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15

16	17	18	19	20	21	22	23	24	25	26	27	28	29	30

Chart the above data using 3 different types of graphs. * It is important to first check in with your teacher to determine which (and why) certain graphs are to be used *

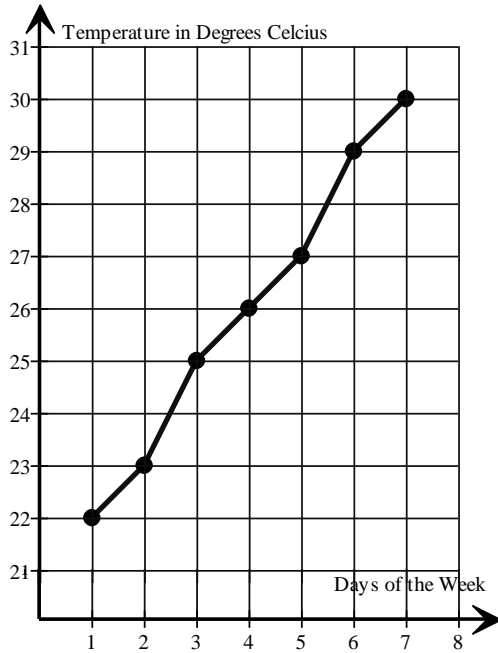




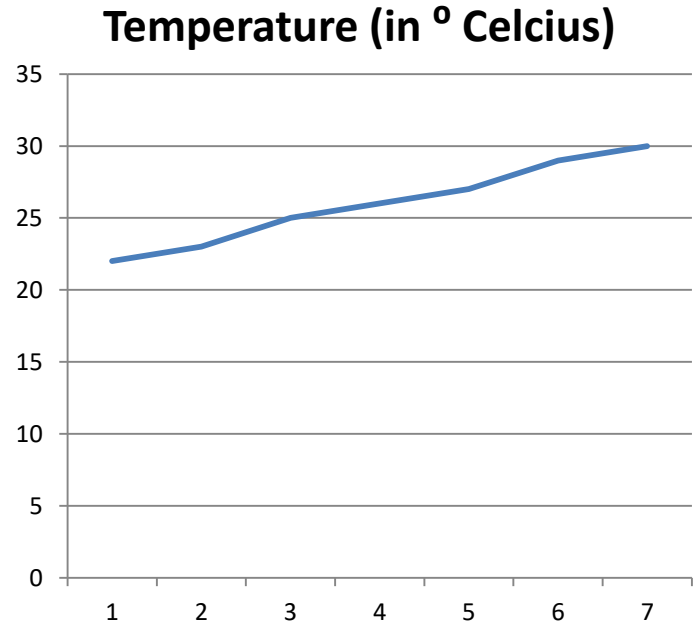


Graph Interpretation (DMP)

OTTAWA'S TEMPERATURE
OVER A ONE-WEEK PERIOD
July 2 to 9, 2014



VANCOUVER'S TEMPERATURE
OVER A ONE-WEEK PERIOD
July 2 to 9, 2014



These two broken line graphs compare the recorded temperatures from July 2 to 9, 2014 for Ottawa and Vancouver.

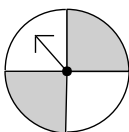
- Which city do you think has the bigger temperature increase? _____
- What was Ottawa's temperature on Day 7? _____
What was Ottawa's temperature on Day 1? _____
What is the difference in temperature between Day 7 and Day 1 in Ottawa? _____
- What was Vancouver's temperature on Day 7? _____
What was Vancouver's temperature on Day 1? _____
What is the difference in temperature between Day 7 and Day 1 in Vancouver? _____
- Taking a closer look at answers in b) and c), which city has the bigger temperature increase?

- People's answer in question a) will often be incorrect. Why do you think this happens?

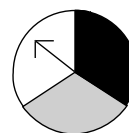
Possible Outcomes of Events (DMP)

1. List the possible outcomes of:
 - a) A die-roll: _____
 - b) Guessing the suit of a card picked from a full deck: _____
 - c) The sum of the numbers indicated on the faces of a 2-die roll: _____
 - d) Randomly picking a number from one to ten: _____
 - e) The gender of a baby at birth: _____
 - f) A person's natural hair color: _____
2. Draw a tree diagram that represents all the possible outcomes of the following events:
 - a) Having 3 kids
 - b) Rolling a die twice

- c) Spinning the spinner twice



- d) Spinning the spinner three times



Possible Outcomes of Events (DMP)

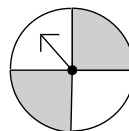
1. Draw a tree diagram that represents all the possible outcomes of the following events:

- a) Picking the blue marble from a bag containing a red, blue, green and yellow marble AND using the spinner on the right.



- b) Flipping a coin and rolling a die.

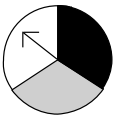
- c) Using the spinner on the right and rolling a die.

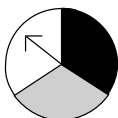


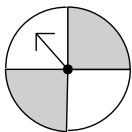
Calculating the Theoretical Probability of Events (DMP)

1. Using the corrected information from worksheet 62, calculate the probability of (fraction AND percent answers):
 - a) Rolling a “2” in a die-roll: _____
 - b) Rolling an odd number in a die-roll: _____
 - c) Picking a “heart” from a full deck of cards: _____
 - d) Not picking a “diamond” from a full deck of cards: _____
 - e) Picking a 3,4,5 or 6 from cards numbered 1,2,3,4,5,6,7,8,9,10: _____
 - f) Picking a prime number from cards numbered 1,2,3,4,5,6,7,8,9,10: _____
 - g) Having a girl as a first-born: _____

2. Using the corrected information from worksheet 62, calculate the probability of (fraction AND percent answers):
 - a) Having two girls and one boy: _____
 - b) Having three boys: _____
 - c) Rolling two 2’s in a two die roll: _____
 - d) Rolling a 0 and a 4 in a two die-roll: _____
 - e) Rolling a sum of “3” in a two die-roll: _____
 - f) Getting white twice and black once when spinning this spinner 3 times:


 - g) Getting black three times when spinning this spinner 3 times:


 - h) Getting white four times when spinning this spinner 4 times:



Comparing Theoretical and Experimental Probability - (DMP)

- What is the Theoretical Probability of rolling any given number in a die roll: _____
- Using a die, record the results in 40 rolls of a die.

Roll #	Result	Roll #	Result	Roll #	Result	Roll #	Result
1		11		21		31	
2		12		22		32	
3		13		23		33	
4		14		24		34	
5		15		25		35	
6		16		26		36	
7		17		27		37	
8		18		28		38	
9		19		29		39	
10		20		30		40	

Number Rolled	Tally	Frequency
1		
2		
3		
4		
5		
6		

- a) Using the data from your tables, calculate the Experimental Probability of:

Rolling a "1": _____

Rolling a "2": _____

Rolling a "3": _____

Rolling a "4": _____

Rolling a "5": _____

Rolling a "6": _____

3. Are your results for the Theoretical and Experimental Probability the same? If your results are different, explain why you think this happened.

Comparing Theoretical and Experimental Probability - (DMP)

1. Fill in the following table for the sums of a 2 dice-roll. Then, calculate the **Theoretical Probability** for the following events (Answer expressed in %):

Sum +	1	2	3	4	5	6
1						
2						
3						
4						
5						
6						

Sum of "2": _____ Sum of "3": _____ Sum of "4": _____

Sum of "5": _____ Sum of "6": _____ Sum of "7": _____

Sum of "8": _____ Sum of "9": _____ Sum of "10": _____

Sum of "11": _____ Sum of "12": _____

2. Using 2 dice, record the results of twenty 2-dice rolls. Then, calculate the **Experimental Probability** of:

Roll #	Sum	Roll #	Sum
1		11	
2		12	
3		13	
4		14	
5		15	
6		16	
7		17	
8		18	
9		19	
10		20	

Sum Rolled	Tally	Frequency
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		

a) Sum of "2": _____

b) Sum of "3": _____

c) Sum of "4": _____

d) Sum of "5": _____

e) Sum of "6": _____

f) Sum of "7": _____

g) Sum of "8": _____

h) Sum of "9": _____

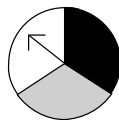
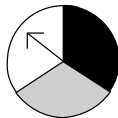
i) Sum of "10": _____

j) Sum of "11": _____

k) Sum of "12": _____

Explain why the Theoretical and Experimental Probability Results differ:

Making Predictions from a Given Probability - (DMP)

1. If you were to flip a coin 180 times, how many times would you predict it would land on “heads”? Explain your reasoning.
2. If a die was rolled 36 times, how many times would you predict the number 5 would appear? Explain your reasoning.
3. If you were to spin this spinner 84 times, how many times would you predict it would land on white? Explain your reasoning.

4. If you were to spin this spinner 66 times, how many times would you predict it would land on either black or grey? Explain your reasoning.

5. If you were to randomly draw a card from a full deck 100 times, how many times would you predict you would pick a “diamond”? Explain your reasoning.
6. The probability of picking a blue marble out of a bag is 20%. If you were to randomly pick a marble from this bag 20 times, how many times do you predict you would pick a blue marble? Explain your reasoning.
7. The probability of winning the lotto 6/49 Jackpot is 0.000 007% each time/draw. If you played 100 times in your life, how many times do you predict you would win?