Grade 7 Mathematics - Final Exam Review

Unit 1: Patterns and Relations (Non-Calculator Unit)

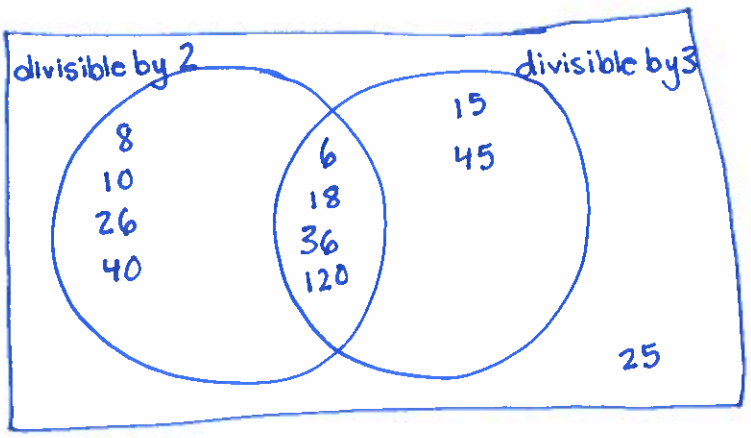
1. Complete the table by writing the divisibility rule for each number.

Number	Divisibility Rule: A number is divisible by:
2	If the last digit is even (0,2,4,6,8)
3	If the SUM of the digits is a multiple of 3 ex: 372 is divisible by 3 since 3+7+2=12 and 12÷3=4
4	If the last two digits is a multiple of 4. ex: 1232 since 32÷4=8
5	If the last digit is a 5 or 0 ex: 25 360 or 2715
6	If it is divisible by 2 and 3. ex: 26 532 since the last digit is even and 2+6+5+3+2=18 and 18÷3=6
8	If the last 3-digits is divisible by 8 ex: 72 648 since 648÷8=81
9	If the sum of the digits is divisible by 9 ex: 135 729 since 1+3+5+7+2+9=27 and 27÷9=3
10	If the last digit ends in 0 ex: 729 670

2. Fill in the chart for divisibility rules with either yes / no.

	2	3	4	5	6	8	9	10
112	Y	N	Y	N	N	Y	N	N
2016	Y	Y	Y	N	Y	Y	Y	N
5100	Y	Y	Y	Y	Y	N	N	Y

3. Use a Venn diagram. Which of 6, 8, 10, 15, 18, 25, 26, 36, 40, 45, and 120 are divisible by 2 and 3? What does the overlap region represent?



6, 18, 36 and 120 are divisible by 2 and 3. This means that these numbers are also divisible by 6.

4. Create a Carroll diagram to sort the numbers according to divisibility by 6 and 9.

30 79 162 3996 23517 31974

	Divisible by 9	Not divisible by 9
Divisible by 6	162, 3996	30, 31974
Not divisible by 6	23517	79

5. Name each of the following as either an equation (has an equal sign) or an expression (does NOT have an equal sign):

A) 3x — expression

B) 5t = 9 — equation

C) 4s + 3 = 7 — equation

D) 4m + 8m -3 — expression

6. Identify the variable, constant term and numerical coefficient for each of the following expressions and equations.

A) 3b + 1 B) 2w C) y + 6

	Variable	Constant term	Numerical coefficient
A) 3b + 1	b	1	3
B) 2w	w	—	2
C) y + 6	y	6	1

7. Write each expression below as an algebraic expression

A) Mike's salary increased by $100 $x + 100$ (x = Mike's salary)

B) It costs $10 per hour plus $5 for renting bicycles $10h + 5$ (h = # of hours)

C) A movie is $7 per student $7s$ (s = # of students)

D) 6 more than (turn around) a number $n + 6$ (n = a number)

E) 10 less than a number $n - 10$ (n = a number)

8. Write the following algebraic expression in words.

A) $2n$ — two times a number or double a number

B) $3 - 8n$ — Eight times a number less than 3.

9. Substitute the value x = 2 into the following expressions

A) $3x + 5 = 3(2) + 5 = 6 + 5 = 11$

B) $\frac{x}{2} - 3 = \frac{2}{2} - 3 = 1 - 3 = -2$

C) Three less than x

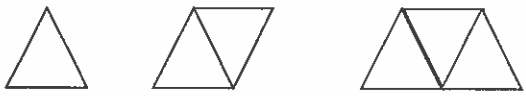
$x - 3 = 2 - 3 = -1$

* Remember to follow the correct order of operation

BEDMAS

( ) ÷ × + −

10. Use the diagrams below to answer the questions.



A.) Continue the pattern to the fifth diagram.

B.) Complete the table to show how the pattern grows.

Diagram number (n)	Number of sticks (s)
1	3
2	5
3	7
4	9
5	11

+2, +2, +2, +2

↑ numerical coefficient (attach to indepent variable)

C.) Describe in writing how the pattern grows.

As the diagram number increases by 1, the number of sticks increases by 2.

D.) Write an algebraic expression to show the relationship between the diagram number (n) and the number of sticks (s). $2n + 1$

E.) How many sticks would be in the 20th diagram?

$n = 20$ $\quad 2n+1 = 2(20)+1 = 40+1 = 41$

11. Complete each input/output table.

Input n	Output 14 - n
1	14-1 = 13
2	14-2 = 12
3	14-3 = 11
4	14-4 = 10

Input n	Output ?
1	7
2	11
3	15
4	19

+4, +4, +4

↑ numerical coefficient

$4n+3$

positive
negative

Unit 2: Integers (Non-Calculator Unit)

1. Use integer tiles to represent the following integers in 2 ways.

A) -7  B) +5  C) -2 

2. What integer is represented by the integer tiles? ● = positive ○ = negative

A) ●● ○○ +2

B) ○ ○ ● -1

C) ○ ● 0

3. Arrange from least to greatest. a) $-9, 6, -4, 0, -2$ b) $-3, 1, -10, -1, 2$

-9, -4, -2, 0, 6 -10, -3, -1, 1, 2

4. Stephanie has a golf score if -3 and George has a golf score of +7. What is the **difference** in their scores?

Subtraction ✓ $(-3) - (+7)$ $= (-3) + (-7)$ $= -10$

Instead of subtracting integers: Keep (the 1st integer), Change (subtraction to addition) Change (2nd integer to the opposite)

5. Rebecca has $-\$46$ in her bank account and \$81 in her savings account. What is the **total** amount of money that she has?

$(-46) + 81 = 35$

81 − 46 = 35

6. Use integer tiles to complete the following addition questions.

negative positive

A) $(-8) + (-2)$

B) $(-1) + (+4)$

C) $(-4) - (-3)$

D) $(-3) - (+1)$

A) $(-8) + (-2) = -10$ 

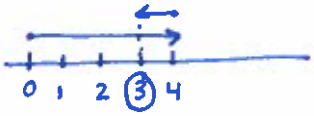
B) $(-1) + (+4) = +3$ 

C) $(-4) - (-3) = -1$ 

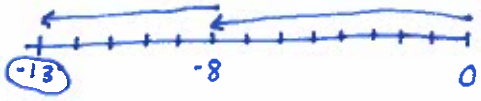
D) $(-3) - (+1) = -4$ 

7. Use a number line to evaluate:

A) $(+4) + (-1) = 3$



B) $(-8) - (+5) = (-8) + (-5) = -13$



8. Evaluate:

A) $(+5) - (-2) = (+5) + (+2) = +7$

B) $(-4) - (+11) = (-4) + (-11) = -15$

C) $(-8) - 5 = (-8) + (-5) = -13$

D) $2 - 7 = 2 + (-7) = -5$

E) $(-3) - (-14) = (-3) + (+14) = +11$

F) $-5 + (-7) = -12$

G) $9 + (-4) = 5$

H) $(-6) + 12 = 6$

Unit 3: Fractions, Decimals, and Percent (Non-Calculator Unit)

1. If $\frac{1}{11} = 0.\overline{09}$, $\frac{2}{11} = 0.\overline{18}$, and $\frac{3}{11} = 0.\overline{27}$

   A) $\frac{4}{11} = ?$ $0.\overline{36}$

   B) $\frac{5}{11} = ?$ $0.\overline{45}$

   C) $\frac{9}{11} = ?$ $0.\overline{81}$

2. If $0.\overline{01} = \frac{1}{99}$, $0.\overline{02} = \frac{2}{99}$, $0.\overline{03} = \frac{3}{99}$, what is $0.\overline{04}$ as a fraction? $\frac{4}{99}$

3. Convert the following decimals into fractions in simplest form.

   A) $0.4 = \frac{4 \div 2}{10 \div 2} = \frac{2}{5}$ B) $0.63 = \frac{63}{100}$ C) $0.02 = \frac{2 \div 2}{100 \div 2} = \frac{1}{50}$ D) $1.9 = 1\frac{9}{10}$ or $\frac{19}{10}$

4. Order the following sets of numbers from smallest to the largest.

   A) 2.3, 2.4, 2.32, 2.36, 2.327 $2.3, 2.32, 2.327, 2.36, 2.4$

   B) $0.96, 0.\overline{9}, 0.9, 0.\overline{96}, 0.09$ $0.09, 0.9, 0.96, 0.\overline{96}, 0.\overline{9}$

   C) $\frac{1}{4}, \frac{1}{2}, \frac{1}{3}$ $\frac{1}{4}, \frac{1}{3}, \frac{1}{2}$

   D) $\frac{16}{30}, \frac{16}{17}, \frac{1}{16}$ $\frac{1}{16}, \frac{16}{30}, \frac{16}{17}$

   E) $0.55, \frac{1}{2}, 1.13, \frac{15}{3}$ $\frac{1}{2}, 0.55, 1.13, \frac{15}{3}$

   $\frac{1}{2} = 0.5$ $\frac{15}{3} = 5$

   0.9600
   0.9999...
   0.9000
   0.9696...
   0.09

5. What number could replace the ?

   A) $0.4 < \frac{?}{8} < 0.6$

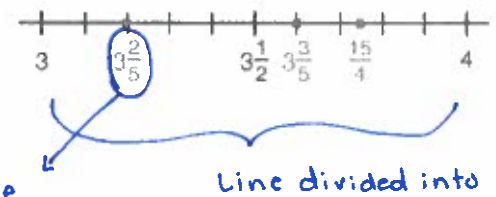
   $\frac{4}{8}$

   B) $\frac{3}{10} < 0.? < \frac{4}{10}$

   $0.3 \downarrow 0.4$

   $0.31, 0.32, \ldots, 0.38, 0.39$

6. Identify which number has been placed in the wrong position.



Line divided into tenths

Should be $3\frac{2}{10} = 3\frac{1}{5}$

7. Solve the following addition and subtraction questions. Check your answer by using **front – end estimation**.

A) 9.2 + 3.5

9.2
+ 3.5
12.7

est: 9+3=12

B) 0.36 + 0.8

0.36
+0.80
1.16

est: 0+0=0

C) 9.6 – 1.42

D) 14.31 – 5.7

8. Evaluate without the use of a calculator.

A) 1.4 x 2.1 = 2.94

14
x21
14
+280
294

B) 0.8 x 0.7 = 0.56

0.8
x0.7
56

C) 1.2 ÷ 0.4

3
4|12
-12
0R

9. Evaluate using Order of Operations:

A) 9.9 + (5.6 × 6.1) ÷ 4

9.9 + 34.16 ÷ 4
9.9 + 8.54
18.44

① 5.6
×6.1
56
+3360
34.16

③ 8.54
4|34.16
-32
21
-20
16
-16
0R

② 9.90
+8.54
18.44

B) 26.9 – 4 + 8.7 × 5

26.9 - 4 + 43.5
22.9 + 43.5
66.4

① 8.7
×5
435

② 26.9
- 4.0
22.9

③ 22.9
+43.5
66.4

10. How many 0.3 L glasses can be filled from a 1.5L bottle of water?

1.5 ÷ 0.3 = 5

5 glasses can be filled.

11. Grade 7 classes have raised $43.21, $63.2, $89.90 selling cookies. How much money have they raised so far?

43.21
63.20
+89.90
196.31

$196.31 raised so far.

12. Neila wants to be 181 cm tall and she is now 121.4 cm. How much more does she need to grow?

181.0
-121.4
59.6

She needs to grow 59.6 cm more.

13. Express the following percents as decimals and fractions.

A) 30% = 0.30
= 0.3
= $\frac{3}{10}$

B) 4% = 0.04
= $\frac{4}{100}$
= $\frac{1}{25}$

C) 68% = 0.68
= $\frac{68}{100}$
= $\frac{34}{50}$
= $\frac{17}{25}$

Calculator Allowed for 14-17

14. What is 45% of 150?

$0.45 \times 150 = 67.5$

15. At Washington High School, 35% of all students own a Wii system. If there are 500 students at the school, how many own a Wii game system?

35% of 500

0.35×500

175

16. Will got 27 out 42 marks on his test. What percent did he get?

$\frac{27}{42} \rightarrow 27 \div 42 = 0.64 \longrightarrow 0.64 \times 100 = \boxed{64\%}$

17. Kaylee was shopping for a jacket. The jacket she wanted was on sale at Athlete's World with a rate of discount of 30% off. If the regular price of the jacket is $68.99, find the discount and sale price.

Discount = 30% of $68.99

$= 0.30 \times 68.99$

$= \$20.70$

Sale Price = $68.99 - 20.70$

$= \$48.29$

Unit 4: Circles and Area (Calculator Allowed Unit)

1. Find the radius of the following circles with the given diameters.

A) d = 10 mm $r = 10 \div 2 = 5$

B) d = 6cm $r = 3$

C) d = 7m $r = 3.5$

2. Find the diameter of the following circles with the given radius.

A) r = 6 cm $d = 6 \times 2 = 12$

B) r = 9cm $d = 18$

C) r = 2.6 $d = 5.2$

3. **Estimate** the circumference of the circles with given radius or diameter.

use $\pi = 3$ $C = \pi d$

A) r = 6cm $d = 12$ $C = (3)(12) = 36\text{cm}$

B) d = 8 cm $C = 3(8) = 24\text{cm}$

4. Find the circumference of the circles with given radius or diameter.

A) r = 6cm

$d = 12$

$C = \pi d$

$= (3.14)(12)$

$= 37.68\text{cm}$

B) r = 3cm

$d = 6$

$C = \pi d$

$= (3.14)(6)$

$= 18.84\text{cm}$

C) d = 8 cm

$C = \pi d$

$= (3.14)(8)$

$= 25.12\text{cm}$

D) d = 10 cm

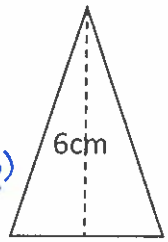
$C = \pi d$

$= (3.14)(10)$

$= 31.4\text{cm}$

5. Find the area of the following shapes (be sure to include your units).

A)



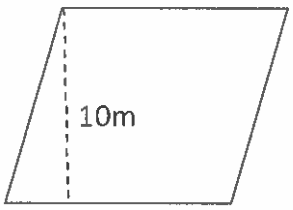
$A_{triangle} = \frac{bh}{2}$

$= \frac{(4)(6)}{2}$

$= \frac{24}{2}$

$= 12 cm^2$

B)

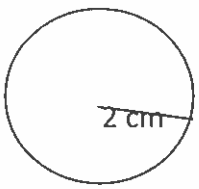


$A_{parallelogram} = b \times h$

$= 8 \times 10$

$= 80 m^2$

C)



$A_{circle} = \pi \times r \times r$

$= 3.14 \times 2 \times 2$

$= 12.56 cm^2$

6. The area of a triangular flag is 120 cm^2. If the base of the flag is 40 cm, how high is the flag?

$A_{triangle} = \frac{bh}{2}$

$120 = \frac{40x}{2}$ (×2)

$240 = 40x$ (×2)

$h = 6$

7. Find the area of the circles with the following radius or diameter.

A) r = 10 mm

$A = \pi \times r \times r$

$= 3.14 \times 10 \times 10$

$= 314 mm^2$

B) d = 7m

$r = 3.5m$

$A = \pi \times r \times r$

$= 3.14 \times 3.5 \times 3.5$

$= 38.465 m^2$

8. Mr. Baker had a coconut cream pie with the diameter of 35 cm. He cut the pie into 8 slices. Find the area of each slice.

$radius = 35 \div 2 = 17.5$

$A_{circle} = \pi \times r \times r$

$= 3.14 \times 17.5 \times 17.5$

$= 961.63 cm^2$

Area of each slice $= 961.63 \div 8$

$= 120.20 cm^2$

9. A Toonie has a radius of 18 mm. The inside circle of the Toonie has a radius of 0.6 mm. What is the area of the outside ring on the Toonie?

Area Outside $\pi \times r \times r$

$= 3.14 \times 18 \times 18$

$= 1017.36 MM^2$

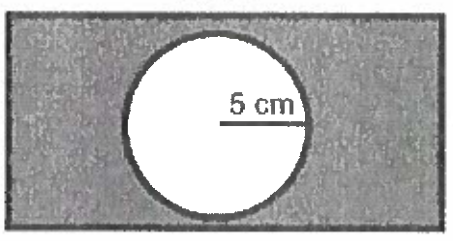
Area inside $= \pi \times r \times r$

$= 3.14 \times 0.6 \times 0.6$

$= 1.1304 mm^2$

Area of Outside Ring $= 1017.36 - 1.1304 = 1016.23 mm^2$

10. John is drilling a hole in a block of wood. What is the area of the shaded region?



$Area_{rectangle} = b \times h$

$= 30 \times 12$

$= 360$

$Area_{circle} = \pi \times r \times r$

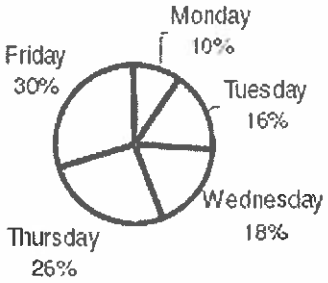
$= 3.14 \times 5 \times 5$

$= 78.5$

Area of Shaded $= 360 - 78.5 = 281.5 cm^2$

Amount of Chocolate Milk Sold in a Week

11.



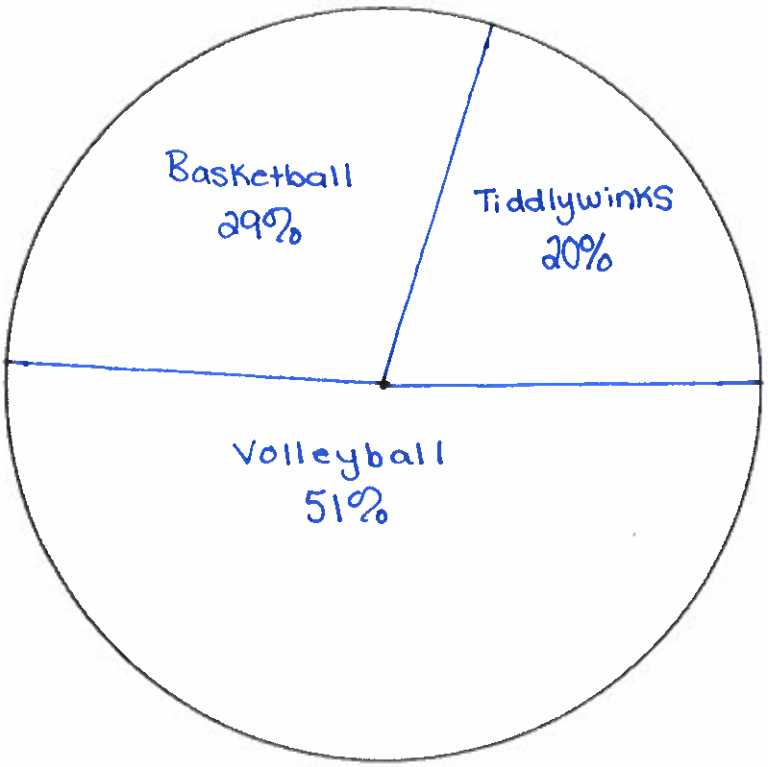
A) What percent of milk is sold on Wednesday? 18%

B) Identify a group of days that makes up about half of the total sales.
Monday, Tuesday and Wednesday since 10% + 16% + 18% = 44% and half is 50%

C) If the sales of chocolate milk for the week are $200, how much is made on Monday?
10% of $200 → 0.10 × 200 = $20

12. The Grade 7 students at CBI were surveyed to see what their favourite sport was. 35 liked Volleyball, 20 liked Basketball, and 14 liked Tiddlywinks. Construct a Circle graph.

Sport	Frequency	Fraction	Decimal	Percent	Degrees (Percent of 360°)
Volleyball	35	$\frac{35}{69}$	0.51	51%	0.51 × 360 = 184°
Basketball	20	$\frac{20}{69}$	0.29	29%	0.29 × 360 = 104°
Tiddlywinks	14	$\frac{14}{69}$	0.20	20%	0.20 × 360 = 72°
Total	69	$\frac{69}{69}$	1	100%	360°



Unit 5: Operations with Fractions (Non-Calculator Unit)

1. Find the LCM of the pairs of numbers.

A) 3,2 LCM = 6 (mult. of 3: 3, 6, 9, ... mult. of 2: 2, 4, 6, ...)

B) 5,6 LCM = 30 (mult of 5: 5, 10, 15, 20, 25, 30 ... mult of 6: 6, 12, 18, 24, 30, ...)

C) 3,4 LCM = 12 (mult of 3: 3, 6, 9, 12, ... mult of 4: 4, 8, 12 ...)

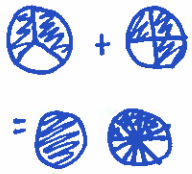
D) 9,6 LCM = 18 (mult of 9: 9, 18, 27, ... mult of 6: 6, 12, 18, 24, ...)

2. Simplify the following fractions (write in lowest terms)

A) $\frac{2\div2}{6\div2} = \frac{1}{3}$ B) $\frac{5\div5}{15\div5} = \frac{1}{3}$ C) $\frac{4\div4}{36\div4} = \frac{1}{9}$ D) $\frac{18\div9}{45\div9} = \frac{2}{5}$

3. Use a model of your choice to find each sum. Sketch the model.

A) $\frac{2}{3}\times\frac{4}{4} + \frac{3}{4}\times\frac{3}{3} = \frac{8}{12} + \frac{9}{12} = \frac{17}{12} = 1\frac{5}{12}$ (mult. of 3: 3, 6, 9, 12, ... mult. of 4: 4, 8, 12 ...)



B) $\frac{2}{3}\times\frac{2}{2} - \frac{1}{2}\times\frac{3}{3} = \frac{4}{6} - \frac{3}{6} = \frac{1}{6}$ (mult. of 3: 3, 6, 9, ... mult. of 2: 2, 4, 6, ...)

4. Add. Write your answer in lowest terms.

write out multiples of each denominator if it helps!

A) $\frac{1}{5}\times\frac{3}{3} + \frac{2}{3}\times\frac{5}{5} = \frac{3}{15} + \frac{10}{15} = \frac{13}{15}$

B) $\frac{2}{7}\times\frac{4}{4} + \frac{3}{4}\times\frac{7}{7} = \frac{8}{28} + \frac{21}{28} = \frac{29}{28} = 1\frac{1}{28}$

C) $\frac{3}{8}\times\frac{5}{5} + \frac{3}{5}\times\frac{8}{8} = \frac{15}{40} + \frac{24}{40} = \frac{39}{40}$

D) $\frac{3}{4}\times\frac{2}{2} + \frac{3}{8} = \frac{6}{8} + \frac{3}{8} = \frac{9}{8} = 1\frac{1}{8}$

E) $\frac{5}{12} + \frac{1}{6}\times\frac{2}{2} = \frac{5}{12} + \frac{2}{12} = \frac{7}{12}$

F) $\frac{1}{2}\times\frac{5}{5} + \frac{2}{5}\times\frac{2}{2} = \frac{5}{10} + \frac{4}{10} = \frac{9}{10}$

5. Subtract. Be sure to put your answer in lowest terms when necessary.

A) $\frac{3}{4}\times\frac{3}{3} - \frac{2}{3}\times\frac{4}{4} = \frac{9}{12} - \frac{8}{12} = \frac{1}{12}$

B) $\frac{4}{5}\times\frac{3}{3} - \frac{1}{3}\times\frac{5}{5} = \frac{12}{15} - \frac{5}{15} = \frac{7}{15}$

C) $\frac{3}{12} - \frac{1}{6}\times\frac{2}{2} = \frac{3}{12} - \frac{2}{12} = \frac{1}{12}$

6. Write an addition equation and find the answer to the sum represented below.

$1\frac{3}{4} + 1\frac{3}{8} = 3\frac{1}{8}$

7. Evaluate. Put all answers in lowest terms.

A) $1\frac{2}{5} + 1\frac{1}{6}$ = $\frac{7}{5} + \frac{7}{6}$ = $\frac{42}{30} + \frac{35}{30}$ = $\frac{77}{30}$ = $2\frac{17}{30}$

B) $2\frac{1}{3} + 1\frac{3}{4}$ = $\frac{7}{3} + \frac{7}{4}$ = $\frac{28}{12} + \frac{21}{12}$ = $\frac{49}{12} = 4\frac{1}{12}$

C) $2 - \frac{3}{4}$ = $\frac{8}{4} - \frac{3}{4}$ = $\frac{5}{4}$ = $1\frac{1}{4}$

D) $4\frac{1}{2} - 2\frac{5}{6}$ = $\frac{9}{2} - \frac{17}{6}$ = $\frac{27}{6} - \frac{17}{6}$ = $\frac{10}{6} = \frac{5}{3} = 1\frac{2}{3}$

8. Kyla is making cookies. She has $2\frac{1}{4}$ bags of chocolate chips. She uses $1\frac{2}{3}$ of these bags to make her cookie dough. What fraction of bags of chocolate chips are left?

$2\frac{1}{4} - 1\frac{2}{3} = \frac{9}{4} - \frac{5}{3} = \frac{27}{12} - \frac{20}{12} = \frac{7}{12}$ — $\frac{7}{12}$ left

9. This week, Mark practiced piano for $3\frac{1}{2}$ hours, played soccer for $6\frac{1}{4}$ hours and talked on the phone for $4\frac{1}{3}$ hours. What was the total amount of time spent on these activities?

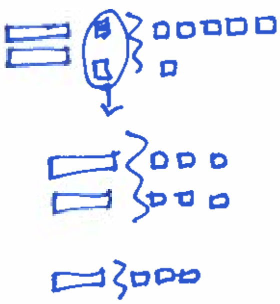
$3\frac{1}{2} + 6\frac{1}{4} + 4\frac{1}{3} = 3\frac{6}{12} + 6\frac{3}{12} + 4\frac{4}{12} = 13 + \frac{13}{12} = 13 + 1\frac{1}{12} = 14\frac{1}{12}$

Unit 6: Equations (Calculator Allowed Unit)

1. Solve each equation by using a model. Show all steps.

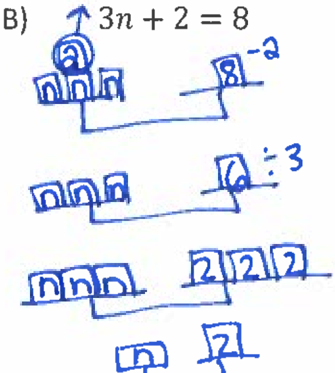
▭ positive
▫ negative

A) $2n - 1 = 5$



$n = 3$

B) $3n + 2 = 8$



$n = 2$

2. Solve algebraically. Verify your solution.

A) $2y = 18$ — $\frac{2y}{2} = \frac{18}{2}$ — $y = 9$

B) $n - 6 = 7$ — $+6$ $+6$ — $n = 13$

C) $t + 7 = 11$ — -7 -7 — $t = 4$

D) $\frac{x}{3} = 12$ — $\times 3$ — $x = 36$

E) $2n - 5 = 3$ — $+5$ $+5$ — $\frac{2n}{2} = \frac{8}{2}$ — $n = 4$

F) $-3 + 3n = 9$ — $+3$ $+3$ — $\frac{3n}{3} = \frac{12}{3}$ — $n = 4$

G) $5n - 14 = -4$ — $+14$ $+14$ — $\frac{5n}{5} = \frac{10}{5}$ — $n = 2$

H) $4n + 7 = 11$ — -7 -7 — $\frac{4n}{4} = \frac{4}{4}$ — $n = 1$

3. Show whether or not x = 7 is the solution to each equation

A) $6x = 48$

$6(7) \stackrel{?}{=} 48$

$42 \neq 48$

B) $3x + 2 = 20$

$3(7)+2$

$21 + 2$

23 ☹

C) $\frac{x}{7} = 1$ ... $x = 7$ is the solution.

$\frac{7}{7} = 1$

$1 = 1$ ☺

4. Students from CBI were going on a school trip to Marble. The cost of the bus was $100 plus $5 per student. The total cost was $250.

A) Write an equation you could use to solve the problem n = # of students

$5n + 100 = 250$

B) Solve your equation using algebra.

$5n + 100 = 250$

$-100 \quad -100$

$\frac{5n}{5} = \frac{150}{5}$ $\boxed{n = 30}$

C) Verify the solution

$5n + 100 = 250$

$5(30) + 100$

$150 + 100$

250 ☺

5. The table shows the relationship between the number of students in the cafeteria and the cost of providing their lunches.

Students n	1	2	3	4	5
Cost($) C	4.50	9.00	13.50	18.00	22.50
		4.5	4.5	4.5	4.5

A) Write an equation for finding the lunch cost(c) for the number of students(s).

$C = 4.5n$

B) Use the equation to find the cost of 50 people having lunch in the cafeteria.

$n = 50$

$C = 4.5n$

$= 4.5(50)$

$= 225$

Cost is $225

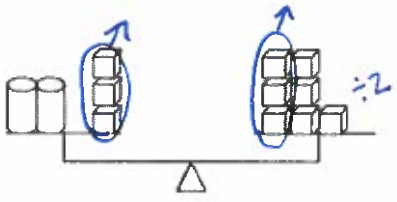
C) How many people were in the cafeteria if lunch cost $225?

$C = 4.5n$

$\frac{225}{4.5} = \frac{4.5n}{4.5}$ $n = 50$

50 people were in the cafeteria

6. Solve the equation represented by the model below.



$x = 2$

Unit 7: Data Analysis (Calculator Allowed Unit)

1. Find the mean, median and mode of the following set of data: 3, 4, 5, 5, 6, 7

   3, 4, 5, 5, 6, 7 Mean = $\frac{30}{6} = 5$ mode is 5 median = $\frac{5+5}{2} = \frac{10}{2} =$

2. What is the range for the following set of data:

   23%, 26%, 42%, 53%, 58% Range = 58 - 23 = 35%.

3. Sarah has been trying to improve her marks in her Math and Science in Grade7. Her test scores for the year in Science are 52%, 56%, 69%, 75%. Her test scores for Math are 48%, 57%, 72%, 85%. Science: mean = $\frac{252}{4} = 63\%$ mode is none median = $\frac{56+69}{2} = \frac{125}{2} =$ 62.5%

   A) Find the mean, median and mode of each set of tests.

   Math: mean = $\frac{263}{4} = 65.5\%$ mode is none median = $\frac{57+72}{2} = \frac{129}{2} = 64.5\%$

   B) Which measure of central tendency would you use to show which subject she improved the most in?

4. Vicky records the snow fall each day from Monday to Friday. She finds that the first four days the snow fall amounts are: 2cm, 5cm, 1cm, and 0 cm. If the mean snow fall was 3 cm, how much snow had to fall on Friday?

   $\frac{2+5+1+0+\boxed{7}}{5} = 3$ What divided by 5 equals 3? 15 The sum must be 15

5. Which measure of central tendency best represents the data below? Explain.

   5, 5, 5, 6, 7, 7, 8, 20

   mean = $\frac{63}{8} = 7.9$

   median = 6.5

   mode is 5

   mean is the best because there are few outliers.

6. Liam surveyed car dealerships in the city to find out the average cost of a new car. He recorded the following prices: $19 000, $20 000, $21 000, $25 000, and $2 900. Which measure of central tendency best represents the data?

7. Find the probability of the following situations and express each as a fraction, ratio and percent.

   A) P(rolling a 3 on a die) = $\frac{1}{6} = 1:6 = 16.\overline{6}\%$ B) P(rolling an odd number on a die) = $\frac{3}{6} = \frac{1}{2} = 1:2 = 50\%$

8. John has a bag of 2 red pencils, 3 blue pencils and 7 yellow pencils. What is the probability of reaching in the bag and selecting a blue pencil (in lowest terms)?

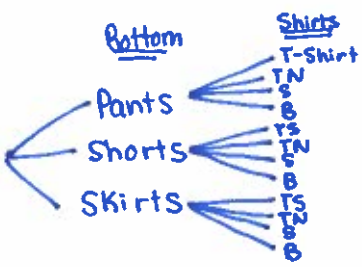
   P(Blue) = $\frac{3 \div 3}{12 \div 3} = \frac{1}{4}$

9. Classify each of the following events as either impossible or certain

A) The sun rising tomorrow certain
B) There being snow next winter certain
C) Sam growing 500 feet in one year impossible
D) Having to go to school next year certain
E) Your principal coming to school on a unicycle impossible

10. Students have an option of buying school uniforms. They can pick from navy pants, shorts or skirts for bottoms and yellow t-shirts, turtle necks, sweater or blouses.

A) Draw a diagram to represent the sample space to show their uniform choices.



Possible Outcomes

P TS
P TN
P S
P B
Sh TS
Sh TN
Sh S
Sh B
Skirt TS
Skirt TN
Skirt S
Skirt B

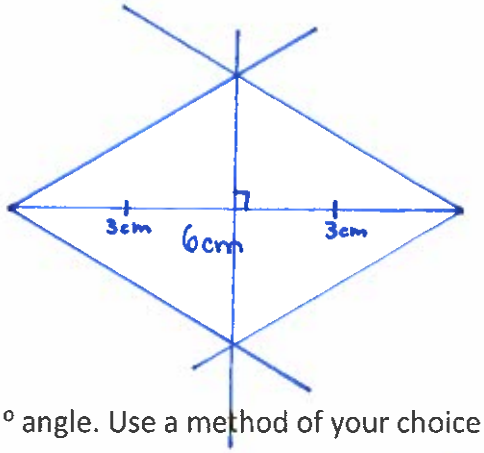
B) What is the probability of a student randomly picking navy pants and a yellow sweater? $P(\text{Pants and Sweater}) = \frac{1}{12}$

C) What is the probability of a student randomly picking a navy bottom and a yellow turtle neck? $P(\text{Navy Bottom and TN}) = \frac{3 \div 3}{12 \div 3} = \frac{1}{4}$

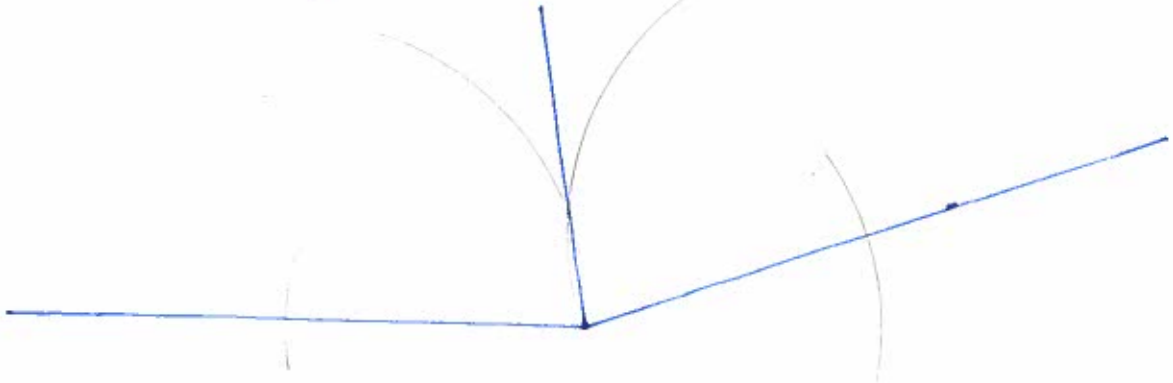
Unit 8: Geometry (Calculator Allowed Unit)

1. Draw a line segment CD that is 8cm. Use a method of your choice to draw a parallel line segment to CD.

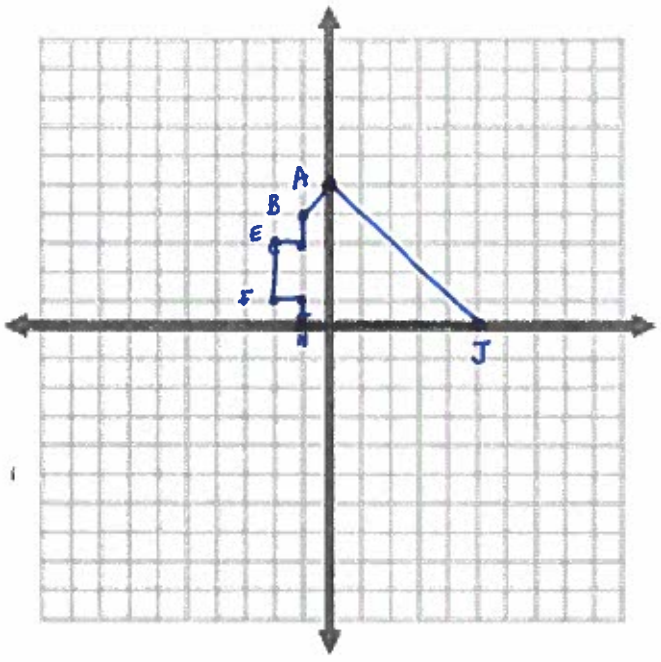
2. Draw a line segment AB that is 6 cm. Use a method of your choice to draw a perpendicular bisector to AB.



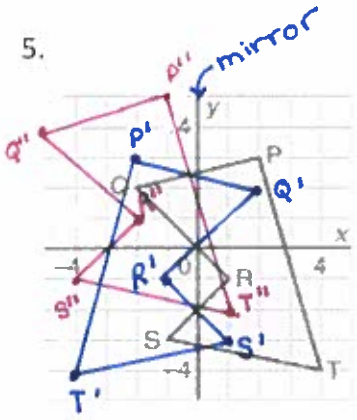
3. Draw a 160° angle. Use a method of your choice to bisect the angle.



4. Draw the points: A(0,5), B(-1,4), C(-1,3), D(-2,3), E(-3,2), F(-2,1), G(-1,1), H(-1,0), J(5,0). Join the points in order and then join J to A.



5.



A) Reflect the shape across the y-axis and translate the shape 2 units up and 3 units to the left.

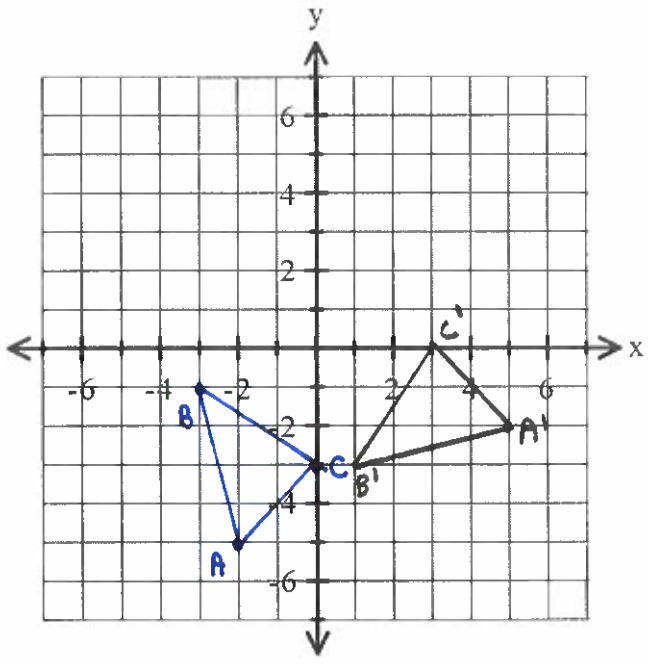
B) Give the coordinates of the new image.

P'' (-1 , 5)
Q'' (-5 , 4)
R'' (-2 , 1)
S'' (-4 , -1)
T'' (1 , -2)

6. Plot the points A (−2, −5), B (−3, −1), and C (0, −3).

   Rotate the shape 90^0 ccw around the origin.

   Give the coordinates of the image.



A' (5, -2)

B' (1, -3)

C' (3, 0)