MATHEMATICS 10-4 A

Mr. M Cherney

COURSE OUTLINE 2024-2025 A

Ch 1 Wholes, Decimals	7(8 1st)-5 Classes-Lessons	7(8) School Days	Sept 3 – Sept 12
Ch 2 Fractions	9(11 FR)-7 Classes-Lessons	9(11) School Days	Sept 13 – Oct 1
Ch 3 Data	7-5 Classes-Lessons	7 School Days	Oct 2– Oct 10
Ch 4 Relationships	7-5 Classes-Lessons	7 School Days	Oct 11 – Oct 22
Ch 5 Percents	6-4 Classes-Lessons	6 School Days	Oct 23 – Oct 31
Ch 6 Measurement	9-7 Classes-Lessons	9 School Days	Nov 1 – Nov 14
Ch 7 Integers	8-6 Classes-Lessons	8 School Days	Nov 15 – Nov 26
Ch 8 Temperature, Capacity	10-8 Classes-Lessons	10 School Days	Nov 27 – Dec 11
Ch 9 Geometry	9(10 TAL)-7 Classes-Lessons	9(10) Schools Days	Dec 12 – Jan 8
Course Review	6-9 Classes-Lessons	6 School Days	Jan 9 – Jan 16
In Class Final Part 1	1-1 Classes-Lessons	1 School Days	Jan 17 – Jan 17
	79(83)-54 Classes-Lessons	79(83) School Days	

Final

Final Exam	Jan 20 – 27

COURSE MARKING 2024-2025 A

Heading	Date	Weight	Points Earned (%)	Percent (%)
Course Work		80		
Tests		90		
Ch 1 Wholes, Decimals		12		
Ch 2 Fractions		11		
Ch 3 Data		11		
Ch 4 Relationships		11		
Ch 5 Percents		11		
Ch 6 Measurement		11		
Ch 7 Integers		11		
Ch 8 Temperature, Capacity		11		
Ch 9 Geometry		11		
Homework		10		
Final Exam		20		
Final Grade				

Daily Homework for each assignment is due the day the day the chapter test is written when your workbooks are collected. It will be marked for completeness, 1 mark for each completed question out of the total assigned questions. Each question number of your work is to be highlighted once (**not** abc parts) with a marker.

Math 10-4 Formula Sheet

Unit Relationships and Formulas

Metric Unit Relationships

Length	Mass	Capacity	Volume
kilometre (km) 1 km = 1000 m	tonne (t) 1 t = 1000 kg	kilolitre (kL) 1 kL = 1000 L	1 m^3 = 1 kL 1 m^3 = 1000 L
metre (m) 1 m = 100 cm 1 m = 1000 mm	kilogram (kg) 1 kg = 1000 g	litre (L) 1 L = 1000 mL	1 cm^3 = 1 mL
centimetre (cm) 1 cm = 10 mm	gram (g) 1 g = 1000 mg		
millimetre (mm)	milligram (mg)	millilitre (mL)	

Imperial Unit Relationships

Length	Mass	Capacity
mile (mi) 1 mi = 1760 yd 1 mi = 5280 ft	ton (T) 1 T = 2000 lb	gallon (gal) 1 gal = 4 qt 1 gal = 16 c
yard (yd) 1 yd = 3 ft 1 yd = 36 in.	pound (lb) 1 lb = 16 oz	quart (qt) 1 qt = 4 c 1 qt = 32 fl oz
foot (ft or ') 1 ft = 12 in.		cup (c) 1 c = 8 fl oz
inch (in. or ")		fluid ounce (fl oz) 1 fl oz = 2 tbsp
		tablespoon (tbsp) 1 tbsp = 3 tsp
		teaspoon (tsp)

Imperial Unit to Metric Unit Relationships

Length	Mass	Capacity
1 mi ≐ 1.61 km	1 T ≐ 0.91 t	1 gal ≐ 3.79 L
1 yd ≐ 0.91 m	1 lb ≐ 0.45 kg 1 lb ≐ 450 g	1 qt ≐ 0.95 L
1 ft ≐ 0.31 m	1 oz ≐ 28.35 g	1 c ≐ 250 mL
1 in. = 2.54 cm		1 fl oz ≐ 29.57 mL
		1 tbsp ≐ 15 mL
		1 tsp ≐ 5 mL

Metric Unit to Imperial Unit Relationships

Length	Mass	Capacity
1 km ≐ 0.62 mi	1 t ≐ 1.10 T	1 L ≐ 0.26 gal
1 m ≐ 1.09 yd 1 m ≐ 3.27 ft	1 kg ≐ 2.21 lb 1 kg ≐ 35.27 oz	1 L ≐ 1.06 qt
1 cm ≐ 0.39 in.	1 g ≐ 0.04 oz	1 mL ≐ 0.03 fl oz
1 mm = 0.039 in.		

Polygon Perimeter Formulas

regular polygon	$P = ns$, where P is perimeter, n is number of sides, s is side length
rectangle	$P = 2l + 2w$, where P is perimeter, l is length, w is width
square	$P = 4s$, where P is perimeter, s is side length
triangle	$P = a + b + c$, where P is perimeter, a, b, and c are side lengths

Polygon Area Formulas

square	$A = s \times s$, where A is area, s is side length
triangle	$A = b \times h \div 2$, where A is area, b is base, h is height
rectangle	$A = l \times w$, where A is area, l is length, w is width
parallelogram	$A = b \times h$, where A is area, b is base, h is height

Circle Formulas

$d = 2r$, where d is diameter, r is radius
$C = \pi d$, where C is circumference, d is diameter
$C = 2\pi r$, where C is circumference, r is radius
$A = \pi \times r \times r$, where A is area, r is radius

Math 10-3 Formula Sheet

Linear Measurement

1 ft = 12 in
1 yd = 3 ft
1 mi = 1760 yd
1 acre = 4840 sq yd

1 m = 1000 mm
1 m = 100 cm
1 km = 1000 m

Imperial to SI
1 in $\doteq$ 2.54 cm
1 ft $\doteq$ 0.31 m
1 yd $\doteq$ 0.91 m
1 mi $\doteq$ 1.61 km
1 acre $\doteq$ 0.4047 ha

SI to Imperial
1 mm $\doteq$ 0.039 in
1 cm $\doteq$ 0.39 in
1 m $\doteq$ 1.09 yd
1 km $\doteq$ 0.62 mi
1 ha $\doteq$ 2.4711 acres

In a circle

diameter = radius × 2
circumference = $\pi \times$ diameter
circumference = $\pi \times$ radius × 2

Area

Triangle: $A = \frac{1}{2}(b \times h)$

Trapezoid: $A = \frac{1}{2}$(sum of parallel lengths) × height

Circle: $A = \pi r^2$

Parallelogram: $A =$ base × height

Imperial to SI
1 sq in = 6.4516 cm^2
1 sq ft = 0.0929 m^2
1 sq yd = 0.8361 m^2
1 sq mi = 2.5900 km^2

SI to Imperial
1 cm^2 = 0.1550 sq in
1 m^2 = 10.7639 sq ft
1 km^2 = 0.3861 sq mi

Mass

SI Mass
1 t = 1000 kg
1 kg = 1000 g
1g = 0.001 mg

Imperial (US)
1 lb = 16 oz
1T = 2000 lb

Imperial (US) to SI Mass
1 oz = 28.35 g
1 lb = 0.45 kg
1 T = 0.91 t

SI to Imperial (US) Mass
1 g = 0.04 oz
1 kg = 2.21 lb
1 t = 1.10 T

Surface Area

Closed cone: $SA = \pi r^2 + \pi rs$

Prefixes

penta means 5
hexa means 6
hepta means 7
octa means 8
nona means 9
deca means 10

Volume

SI Volume

1 hm^3 = 1 000 000 m^3
1 dam^3 = 1000 m^3
1m^3 = 1 000 000 cm^3
1 cm^3 = 0.000 001 m^3
1 dm^3 = 0.001 m^3
1 km^3 = 1 000 000 000 m^3
1 cm^3 = 1 mL

Imperial Volume

1 cu ft = 1728 cu in
1 cu yd = 27 cu ft

Imperial to SI Volume

1 cu in = 16.39 cm^3
1 cu ft = 28.32 dm^3
1 cu ft = 0.02832 m^3
1 cu yd = 0.76 m^3
1 cu mi = 4.17 km^3

SI to Imperial Volume

1 cm^3 = 0.06 cu in
1 m^3 = 1.31 cu yd
1 km^3 = 0.24 cu mi

Temperature

$$F = \frac{9}{5}C + 32$$

$$C = \frac{5}{9}(F - 32)$$

Capacity

SI Capacity

1 kL = 1000 L
1 hL = 100L
1 daL = 10 L
1 dL =0.1 L
1 cL = 0.01 L
1 mL = 0.001 L

Imperial Capacity (US)

1 fl oz = 2 T (tablespoons)
1 c = 8 fl oz
1 pt = 2 c
1 qt = 2 pt
1 gal = 4 qt

Imperial to SI Capacity

1 fl oz = 29.57 mL
1 pt = 0.47 L
1 qt = 0.95 L
1 gal = 3.79 L

SI to Imperial Capacity

1 mL = 0.03 fl oz
1 L = 2.11 pt
1 L = 1.06 qt
1 L = 0.26 gal

Right Triangles

Pythagorean Theorem

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

Ratios of Sides

$$\sin\angle A = \frac{opposite}{hypotenuse}$$

$$\cos\angle A = \frac{adjacent}{hypotenuse}$$

$$\tan\angle A = \frac{opposite}{adjacent}$$

MATHEMATICS 10C FORMULA SHEET

Graphing Calculator Window Format $x[x_{\min}, x_{\max}, x_{scl}]$ $y[y_{\min}, y_{\max}, y_{scl}]$

Conversion Tables

Imperial	*Metric*
1 inch = 1"=1 in	1 millimetre = 1 mm
1 foot = 1'=1 ft	1 centimetre = 1 cm
1 yard = 1 yd	1 metre = 1 m
1 mile = 1 mi	1 kilometre = 1 km
1 ft = 12 in	1 cm = 10 mm
1 yd = 3 ft = 36 in	1 m = 100 cm = 1000 mm
1 mi = 1760 yd = 5280 ft	1 km = 1000 m

Cross Over

1 in = 2.54 cm
1 ft = 30 cm = 0.3 m
1 yd = 91.44 cm = 0.9144 m
1 mi = 1.6 km

1 mm = 4/100 in = 0.04 in
1 cm = 4/10 in = 0.4 in
1 m = 39 in = 3 ¼ ft = 3.25 ft
1 km = 0.6 mi

Surface Area

Prisms	$SA = A_L + B + B$
Pyramids	$SA = A_L + B$
Regular Pyramids and Cones	$SA = \frac{1}{2}(s)(P) + B$
Cones	$SA = \pi rs + \pi r^2$
Cylinders	$SA = 2\pi rh + 2\pi r^2$
Spheres	$SA = 4\pi r^2$
Hemispheres	$SA = 3\pi r^2$

Volume

Prisms	$V = Bh$
Pyramids	$V = \frac{1}{3}Bh$
Cones	$V = \frac{1}{3}\pi r^2 h$
Cylinders	$V = \pi r^2 h$
Spheres	$V = \frac{4}{3}\pi r^3$
Hemispheres	$V = \frac{2}{3}\pi r^3$

Trigonometry

SOH CAH TOA

$$\sin A = \frac{opp}{hyp} \quad \cos A = \frac{adj}{hyp} \quad \tan A = \frac{opp}{adj}$$

Pythagoras

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

Angle Sum

$$\angle A + \angle B + \angle C = 180°$$

Polynomials

Factoring
- Prime Factorization
- Common Factor
- Product Sum Factoring
- Factor by Grouping (Decomposition)
- Perfect Trinomial Squares
- Difference of Squares

Expanding
- Distributive Property
- FOIL
- Binomial Squares
- Conjugates

Radicals and Powers

$$x^a \times x^b = x^{a+b}$$

$$x^a \div x^b = x^{a-b}$$

$$x^{-a} = \frac{1}{x^a} \text{ or } \left(\frac{x}{y}\right)^{-a} = \left(\frac{y}{x}\right)^a, \quad x, y \neq 0$$

$$x^a \div x^a = x^{a-a} = x^0 = 1, \qquad x \neq 0$$

$$(xy)^a = x^a y^a$$

$$\left(\frac{x}{y}\right)^a = \frac{x^a}{y^a}, \qquad y \neq 0$$

$$\left(x^a\right)^b = x^{ab}$$

$$x^{\frac{a}{b}} = \left(\sqrt[b]{x}\right)^a = \sqrt[b]{x^a} = x^{a \times \frac{1}{b}}$$

Linear Relations

$$m = \frac{rise}{run} = \frac{\Delta y}{\Delta x} = \frac{y_2 - y_1}{x_2 - x_1}$$

Linear Functions

Slope Intercept Form

$$y = mx + b$$

Slope Point Form

$$y - y_1 = m(x - x_1)$$

Two Point Form

$$y - y_1 = \frac{y_2 - y_1}{x_2 - x_1}(x - x_1)$$

Two Intercept Form

$$\frac{x}{a} + \frac{y}{b} = 1$$

General Form

$$Ax + By + C = 0$$

Standard Form

$$Ax + By = -C$$