

Math Assessment Review – Part II

Important Information about this review package

This review material has been prepared so that you can refresh your math skills prior to writing the assessment. It is not meant to teach new material. Complete what comes back to you with a bit of a refresher. If you run into difficulties, it's time to stop and make an appointment for your math assessment. You will be provided two options for your math assessment on the [Assessment Centre](#) website; select the option that you feel is the best fit for you. If you are unsure which assessment option to choose, contact an assessor by emailing accessassessment@camosun.ca , calling (250) 370-3945 or contact a Student Navigator at (250) 370-3466 or (250) 370-3847 and they can assist you with the decision.

Use the links provided in the review material to get help on the questions, and for extra practice. These links connect you with Khan Academy, an established online math learning program. If you wish additional instruction, search using the link title, and you will find many other learning videos. For example, if you search for help with Place Value, you will come up with several other online learning resources to help with this topic.

Do not use a calculator. You will be required to complete the assessment without a calculator

Answers are at the end of the review.

Part 1 – Measurement and Geometry

1. a) $2400 \text{ m} = \underline{\hspace{2cm}}$ km (Note: $1 \text{ km} = 1000 \text{ m}$)
- b) $0.0315 \text{ m} = \underline{\hspace{2cm}}$ cm (Note: $1 \text{ m} = 100 \text{ cm}$)

Review [measurement](#)

2. a) A triangle has a height of 6 cm and a base of 4 cm. What is the area of the triangle?

- b) A cube has a volume of 64 cm^3 . Find the area of one face of the cube.

Review [Area of a Triangle](#) , [Dimensions of a Cube](#)

c) A circle has a diameter of 6 cm. What is the circumference of the circle? What is the area?

Review [Circumference of a Circle](#), [Area of Circle](#)

Part 2 – Real Numbers

1. Calculate

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

b) $(-2) + (-9) =$ _____

c) $(-15) \div 5 =$ _____

d) $(-6) \times (-9) =$ _____

e) $3 \times (-4) + 5 \times (-6) - 10 =$ _____

f) $\left(-\frac{1}{2}\right) - \left(-\frac{3}{4}\right) =$ _____

Review [Adding and Subtracting Negative Numbers](#), [Multiplying Negative Numbers](#), [Dividing Negative Numbers](#)

2. Calculate

a) $\sqrt{121} =$ _____

b) $\sqrt{2 + 14} =$ _____

c) $\sqrt{28} + \sqrt{7} =$ _____

d) $\sqrt{3} \times \sqrt{5} =$ _____

e) $\frac{\sqrt{16}}{9} =$ _____

f) $\frac{\sqrt{16}}{\sqrt{9}} =$ _____

Review [Introduction to Square Roots](#), [Simplifying Square Roots](#)

Part 3 - Elementary Algebra

1. If $a = 2$ and $b = -5$ then $ab^2 =$ _____

Review [Evaluating Expressions with two variables](#)

2. Simplify $(-2x^2y^3)(-4x^5y^4) =$ _____

Review [Multiplying Monomials](#)

3. $\frac{15p^4}{5p^9} =$ _____

Review [Dividing Monomials](#)

4. Simplify and gather like terms
 $5(3a - 2) - 4(3a - 1)$

Review the [Distributive Property](#), [Gather Like Terms](#)

5. Simplify and gather like terms
 $9x - (2x^2 + 5) + (7x^2 - 4x + 2)$

Review [Subtracting Polynomials](#), [Gather Like Terms](#)

6. Multiply and simplify

Review [Multiplying Polynomials](#)

a) $(2x + 5)(3x - 2)$

b) $(x + 3)(5x^2 - 2x + 1)$

c) $(2x + 3y)^2$

7. Factor

a) $3y^2 - 18y$

Review [Greatest Common Factor](#)

b) $x^2 - x - 30$

Review [Factoring a Quadratic Trinomial](#)

c) $m^2 - 81n^2$

Review [Factoring a Difference of Squares](#)

8. Simplify $\frac{(21x^5y^2)-(14x^2y^2)}{7x^2y}$

Review [Simplifying Rational Expressions](#)

9. Solve the following
a) $7q + 3 = -1$

Review [Solving a Linear Equation](#)

b) $x^2 - 12x + 36 = 0$

Review [Solving a Quadratic Equations](#)

c) $10 - 2x \geq 16$

Review [Solving a Linear Inequality](#)

10. Simplify
 $\frac{3u}{v} + \frac{2u}{3v} - \frac{u}{v}$

Review [Adding Rational Expressions](#)

11. A rectangular yard has an area of 72 m^2 . If the length of the yard is twice the width, what is the perimeter of the yard?

12. Write the equation of the line containing the points $(-1, 3)$ and $(2, 0)$

Review [Writing an Equation of Line Given 2 points](#)

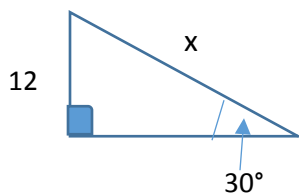
Part 4 – Trigonometry

1. Given a right triangle with side lengths $a = 6$, $b = 8$, determine the length of the hypotenuse.

Review the [Pythagorean Theorem](#)

2. Solve for x . Hints: $\sin 30^\circ = \frac{1}{2}$, $\cos 30^\circ = \frac{\sqrt{3}}{2}$, $\tan 30^\circ = \frac{1}{\sqrt{3}}$

Review [Trigonometry Ratios](#)



Math Assessment Review – Part II

Do not use a calculator. You will be required to complete the assessment without a calculator

Part 1 – Measurement and Geometry

1. a) 2400 m = 2.4 km (Note: 1 km = 1000 m)

b) 0.0315 m = 3.15 cm (Note: 1 m = 100 cm)

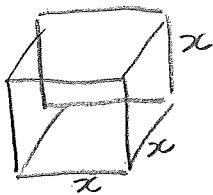
2. a) A triangle has a height of 6 cm and a base of 4 cm. What is the area of the triangle?

Area of a triangle $A = \frac{1}{2} b \times h$ $b = \text{base}$
 $= \frac{1}{2} (4)(6)$ $h = \text{height}$
 $= 12$

The area of the triangle is 12 cm^2 .

b) A cube has a volume of 64 cm^3 . Find the area of one face of the cube.

Let x be the length of a side, then $V = x^3$ where V is volume. We know $V = 64 \text{ cm}^3$. Then



$$x^3 = 64$$

$$x = \sqrt[3]{64}$$

$$= 4$$

The length of a side is 4 cm.
 The area of a face is $x^2 = 4^2 = 16 \text{ cm}^2$

c) A circle has a diameter of 6 cm. What is the circumference of the circle? What is the area?



diameter, $d = 6 \text{ cm}$
 radius, $r = 3 \text{ cm}$

Circumference, $C = 2\pi r = 2\pi(3) = 6\pi \text{ cm}$

Area, $A = \pi r^2 = \pi(3)^2 = 9\pi \text{ cm}^2$

Part 2 – Real Numbers

1. Calculate

a) $7 + (-3) = \underline{4}$

b) $(-2) + (-9) = \underline{-11}$

c) $(-15) \div 5 = \underline{-3}$

d) $(-6) \times (-9) = \underline{54}$

e) $(3 \times (-4)) + (5 \times (-6)) - 10 = \underline{-52}$

$-12 + (-30) - 10$

f) $(-\frac{1}{2}) - (-\frac{3}{4}) = \underline{\frac{1}{4}}$

$= -\frac{1}{2} + \frac{3}{4}$

$= -\frac{2}{4} + \frac{3}{4}$

$= \frac{1}{4}$

2. Calculate

a) $\sqrt{121} = \underline{11}$

b) $\sqrt{2+14} = \underline{\sqrt{16} = 4}$

c) $\sqrt{28} + \sqrt{7} = \underline{3\sqrt{7}}$

$= \sqrt{4 \times 7} + \sqrt{7}$

$= 2\sqrt{7} + \sqrt{7}$

$= 3\sqrt{7}$

d) $\sqrt{3} \times \sqrt{5} = \underline{\sqrt{15}}$

$= \sqrt{3 \times 5}$

$= \sqrt{15}$

e) $\frac{\sqrt{16}}{9} = \underline{\quad}$

$= \frac{4}{9}$

f) $\frac{\sqrt{16}}{\sqrt{9}} = \underline{\quad}$

$= \frac{4}{3}$

Part 3 - Elementary Algebra

1. If $a = 2$ and $b = -5$ then $ab^2 = \underline{2(-5)^2 = 50}$

2. Simplify $(-2x^2y^3)(-4x^5y^4) = \underline{8x^7y^7}$

$$3. \frac{15p^4}{5p^9} = \frac{3p^{-5}}{p^5}$$

4. Simplify and gather like terms

$$5(3a - 2) - 4(3a - 1)$$

$$15a - 10 - 12a + 4$$

$$= 3a - 6$$

5. Simplify and gather like terms

$$9x - (2x^2 + 5) + (7x^2 - 4x + 2)$$

$$= 9x - 2x^2 - 5 + 7x^2 - 4x + 2$$

$$= 5x^2 + 5x - 3$$

6. Multiply and simplify

$$a) (2x + 5)(3x - 2)$$

$$= 6x^2 - 4x + 15x - 10$$

$$= 6x^2 + 11x - 10$$

$$b) (x + 3)(5x^2 - 2x + 1)$$

$$= 5x^3 - 2x^2 + x + 15x^2 - 6x + 3$$

$$= 5x^3 + 13x^2 - 5x + 3$$

$$\begin{aligned}
 \text{c) } (2x+3y)^2 &= (2x+3y)(2x+3y) \\
 &= 4x^2 + 6xy + 6yx + 9y^2 \\
 &= 4x^2 + 12xy + 9y^2
 \end{aligned}$$

7. Factor

a) $3y^2 - 18y$

$$= 3y(y-6)$$

b) $x^2 - x - 30$

$$= (x-6)(x+5)$$

c) $m^2 - 81n^2$

$$(m-9n)(m+9n)$$

8. Simplify

$$\frac{(21x^5y^2) - (14x^2y^2)}{7x^2y}$$

$$= \frac{\cancel{7}x^2\cancel{y}^2(3x^3-2)}{\cancel{7}x^2\cancel{y}}$$

$$= y(3x^3-2)$$

9. Solve the following

a) $7q + 3 = -1 \rightarrow 7q = -4$

$$q = -\frac{4}{7}$$

b) $x^2 - 12x + 36 = 0$

$$(x-6)(x-6) = 0$$

$$x = 6$$

c) $10 - 2x \geq 16$

$-2x \geq 6$

$\frac{-2x}{-2} \leq \frac{6}{-2}$

$x \leq -3$

Note when multiplying or dividing an inequality by a negative value, flip the inequality sign.

10. Simplify

$\frac{3u}{v} + \frac{2u}{3v} - \frac{u}{v}$

common denominator is $3v$

$\frac{3}{3} \left(\frac{3u}{v} \right) + \frac{2u}{3v} - \frac{3}{3} \left(\frac{u}{v} \right) = \frac{9u}{3v} + \frac{2u}{3v} - \frac{3u}{3v} = \frac{8u}{3v}$

11. A rectangular yard has an area of 72 m^2 . If the length of the yard is twice the width, what is the perimeter of the yard?



Let x be the width. Then the length is $2x$

$A = 2x(x) = 2x^2$. Then

$2x^2 = 72$

$x^2 = 36$

$x = \pm \sqrt{36}$

$\rightarrow x = 6 \text{ m}$ (reject $x = -6$)
 length = 12 m for width
 The perimeter is
 $6 + 12 + 6 + 12 = 36 \text{ m}$

12. Write the equation of the line containing the points $(-1, 3)$ and $(2, 0)$

slope $(m) = \frac{3-0}{-1-2} = \frac{3}{-3} = -1$

equation of line is $y-0 = -1(x-2)$ or $y = -x + 2$

Note you can use the $y = mx + b$ equation, and find b , the y -intercept to get the same answer.

Part 4 – Trigonometry

1. Given a right triangle with side lengths $a = 6$, $b = 8$, determine the length of the hypotenuse.

We know $a^2 + b^2 = c^2$ where c is the length of the hypotenuse

$$6^2 + 8^2 = c^2 \quad \text{reject } c = -10$$

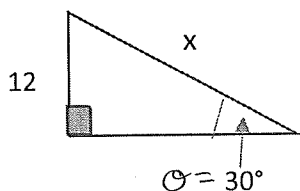
$$36 + 64 = 100$$

$$c = \pm \sqrt{100}$$

$$c = \pm 10$$

The length of the hypotenuse is 10

2. Solve for x . Hints: $\sin 30^\circ = \frac{1}{2}$, $\cos 30^\circ = \frac{\sqrt{3}}{2}$, $\tan 30^\circ = \frac{1}{\sqrt{3}}$



Recall $\sin \theta = \frac{\text{length of opposite}}{\text{length of hypotenuse}}$

$\cos \theta = \frac{\text{length of adjacent}}{\text{length of hypotenuse}}$

$\tan \theta = \frac{\text{length of opposite}}{\text{length of adjacent}}$

Choose $\sin \theta = \frac{\text{opp}}{\text{hyp}}$

$$\sin 30^\circ = \frac{12}{x}$$

$$x = \frac{12}{\sin 30^\circ}$$

$$= \frac{12}{\frac{1}{2}}$$

$$= 12 \left(\frac{2}{1} \right)$$

$$= 24$$