



Albert Einstein High School

Summer Task Cover Sheet



Teacher(s): Ms. Cynthia Reese

Teacher(s) Contact Information:

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Course: IB Math Studies

- ✓ **Purpose of the Summer Assignment:** To provide students and parents with an understanding of what concepts students are expected to know as they enter and/or leave marking period 1 of Algebra 1 class. In addition, this task will provide teachers feedback as to where student strengths and areas of growth are with relation to the content that is to be taught.
- ✓ **Relationship between Summer Task and 1st Quarter Objectives:** Each of the questions in the summer assignment are directly related to skills that will be taught and assessed during the 1st marking period of the 2018-2019 school year.
- ✓ **Description of the Task:** There are 20 questions outlined in this task, each focusing on a different aspect of the concepts related to 1st marking period.
- ✓ **Supportive Resources:** khanacademy.org and youtube searches.

Grading:

- ✓ **DUE DATE:** Thursday September 6th, 2018
- ✓ **DEADLINE:** Friday 7th, 2018
- ✓ **Grading Category:** Completed Work
- ✓ **Points:** 100 points
- ✓ **Extent to which the summer task counts towards the marking period grade:** 5% of the students grade will come from this assignment.
- ✓ **Grading Criteria and Rubric:** *(can be attached as a separate sheet):*
 - Less than 15 of the questions answered will result in a score of 50%
 - 10point penalty for all assignments submitted after Thursday September 6th, 2018.

IB Math Studies Summer Packet for the 2018-2019 School Year

Welcome to International Baccalaureate (IB) Mathematics Studies or IB Math Studies class!

Enclosed are some practice problems to prepare for a successful start in IB Math Studies.

NOTE: Students must show ALL work. This assignment will be collected on the first day of school and you may have a quiz directly from the packet during from the first week of school.

Below is an overview of the general content/skillset that the IB Math Student should be familiar with.

Content	Further guidance
<p>Basic use of the four operations of arithmetic, using integers, decimals and fractions, including order of operations.</p>	<p><i>Examples:</i> $2(3 + 4 \times 7) = 62$; $2 \times 3 + 4 \times 7 = 34$.</p>
<p>Prime numbers, factors and multiples.</p>	
<p>Simple applications of ratio, percentage and proportion.</p>	
<p>Basic manipulation of simple algebraic expressions, including factorization and expansion.</p>	<p><i>Examples:</i> $ab + ac = a(b + c)$; $(x + 1)(x + 2) = x^2 + 3x + 2$.</p>
<p>Rearranging formulae.</p>	<p><i>Example:</i> $A = \frac{1}{2}bh \Rightarrow h = \frac{2A}{b}$.</p>
<p>Evaluating expressions by substitution.</p>	<p><i>Example:</i> If $x = -3$ then $x^2 - 2x + 3 = (-3)^2 - 2(-3) + 3 = 18$.</p>
<p>Solving linear equations in one variable.</p>	<p><i>Examples:</i> $3(x + 6) - 4(x - 1) = 0$; $\frac{6x}{5} + 4 = 7$.</p>
<p>Solving systems of linear equations in two variables.</p>	<p><i>Example:</i> $3x + 4y = 13$, $\frac{1}{3}x - 2y = -1$.</p>
<p>Evaluating exponential expressions with integer values.</p>	<p><i>Examples:</i> $a^b, b \in \mathbb{Z}$; $2^{-4} = \frac{1}{16}$; $(-2)^4 = 16$.</p>
<p>Use of inequalities $<$, \leq, $>$, \geq. Intervals on the real number line.</p>	<p><i>Example:</i> $2 < x \leq 5, x \in \mathbb{R}$.</p>
<p>Solving linear inequalities.</p>	<p><i>Example:</i> $2x + 5 < 7 - x$.</p>
<p>Familiarity with commonly accepted world currencies.</p>	<p><i>Examples:</i> Swiss franc (CHF); United States dollar (USD); British pound sterling (GBP); euro (EUR); Japanese yen (JPY); Australian dollar (AUD).</p>

	Content	Further guidance
2.0	The collection of data and its representation in bar charts, pie charts and pictograms.	
5.0	<p>Basic geometric concepts: point, line, plane, angle.</p> <p>Simple two-dimensional shapes and their properties, including perimeters and areas of circles, triangles, quadrilaterals and compound shapes.</p> <p>SI units for length and area.</p> <p>Pythagoras' theorem.</p> <p>Coordinates in two dimensions.</p> <p>Midpoints, distance between points.</p>	

Practice Problems – Show all work.

1. Evaluate: $4(3^2 - 8) + 4 =$

Answer: _____

2. Evaluate: $2(7 - 8) + 2(4 - 1) =$

Answer: _____

3. State whether the equation is true or false, and why:

$$x(a - b) + c = xa - xb + c$$

4. State whether the equation is true or false, and why:

$$(a - b)^2 = a^2 - b^2$$

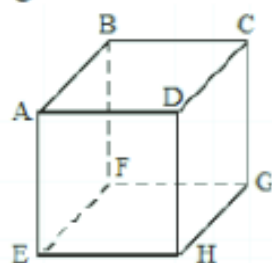
5. Solve for x : $4x^2 - 16 = 0$

Answer: _____

6. Solve for x : $\frac{9x^2}{4} - \frac{4}{9} = 0$

Answer: _____

Questions 7-8 refer to the cuboid (rectangular prism) below. The cuboid has a square base with a length of 5 centimeters.



7. Find the length of \overline{EG} in centimeters.

Answer: _____

8. What is the length of the longest rod that will fit in a box with these dimensions?

Answer: _____

9. Write, as an ordered pair, the coordinates of the intersection of the two lines below.

$$30x + 20y = 60$$

$$-15x - 20y = -75$$

Answer: _____

10. Write, as an ordered pair, the coordinates of the intersection of the two lines.

$$x + 20y = -60$$

$$x - 20y = -80$$

Answer: _____

11. Find, by factoring, the x-intercepts of the following quadratic functions.

a. $f(x) = x^2 - 5x + 6$

Answer: _____

b. $f(x) = x^2 + 3x$

Answer: _____

c. $f(x) = x^2 - 5x - 24$

Answer: _____

d. $f(x) = 16t^2 - 28t + 6$

Answer: _____

e. $f(x) = 2x^2 + x - 6$

Answer: _____

12. Solve and graph (on a number line) the inequality: $-3x + 6 < 9$

13. On May 27th, 2015, the exchange rate between the Euro and the Malaysian ringgit was 3.97 (1 Euro=3.97 Malaysian ringgit). If Pascal is visiting Malaysia and needs 10,000 ringgit for his trip, how many Euro must he bring assuming there are no exchange fees?

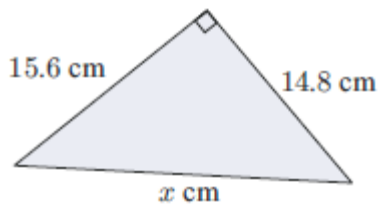
Answer: _____

14. If one inch = 2.54 centimeters, how many centimeters are in 3 yards?

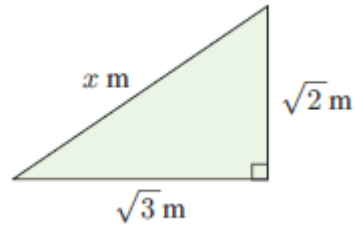
Answer:

For problems 15 – 17, find the length of the missing side. Show all your work.

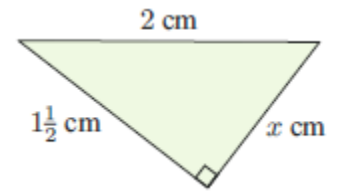
15.



16.



17.



18. Round the following numbers to the nearest 100:

a) 468

b) 923

c) 954

19. Give your answer correct to 2 decimal places:

$$(16.8 + 12.4) \times 17.1$$

20. Give your answer correct to 3 decimal places:

$$18.6 - \frac{12.2 - 4.3}{5.2}$$