

Tuen Mun Government Secondary School
Summer Supplementary Exercise (S1 to S2)

Instructions:

1. Use single-lined paper to finish all the following questions.
2. Show working steps clearly.
3. Hand in your assignment on 2nd September, 2013.
4. Please copy the following directory. In case you lose your assignment, you can access it through “School Website > Structure > Subjects > Mathematics website > Assignment” (http://www.tmgss.edu.hk/School_subject/Maths/basic.htm).

Chapter 1: Directed Number

1. Evaluate the following..
 - (a) $-1 - (+\frac{1}{3}) + (-\frac{2}{3})$
 - (b) $(-2) \times [(-9) - (+5)]$
 - (c) $[7 - (-3)] - (-8)$
 - (d) $(-48) \div (-12) \times (+3)$
 - (e) $\frac{(-24)(+3)(-5)}{(+36)(-2)}$
 - (f) $(-8) \div (+\frac{1}{4}) \div (-2) \div (+2)$
2. The temperature of city A was -3°C yesterday morning.
 - (a) If the temperature of city B was 2°C lower than that of city A yesterday morning, find the temperature of city B yesterday morning.
 - (b) At noon yesterday, the temperature of city B went up by 10°C . If the temperature of the two cities were the same at that time, find the temperature of city A at noon yesterday.
 - (c) In the evening, the temperature of city B was -8°C . To compare with the temperature in the morning, what is the change in temperature?

Chapter 2: Basic Algebra

1. Given that $A = \frac{(a+b)h}{2}$, let $a = 5$, $b = 7$ and $h = 4$, find the value of A .
2. Observe the pattern of each of the following sequences, write down the next two terms of the sequence and determine what kind of sequence it is.
 - (a) $-2, -8, -14, -20, \dots$
 - (b) $-1, 3, -9, 27, \dots$
3. There are 10 seats, 14 seats and 18 seats in the first, second and third rows of a theatre respectively. The number of seats in each of the succeeding rows increases according to this pattern.
 - (a) Find the respective number of seats in the fourth row and the fifth row.
 - (b) What type of sequence is formed by the number of seats in each row?
 - (c) Find the number of seats in the n th row.
[Hint : $10 = 6 + 4 \times 1$, $14 = 6 + 4 \times 2$, $18 = 6 + 4 \times 3$]
 - (d) If there are 10 rows in the theatre, how many seats are there in the last row?

Chapter 3: Basic Geometry

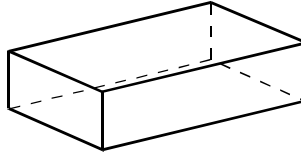
1. Express the following angles in degrees.

(a) $\frac{7}{9}$ of a round angle (b) $\frac{10}{3}$ round angles

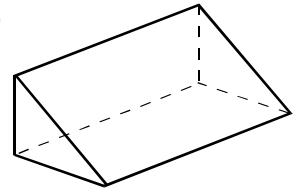
(c) $\frac{1}{4}$ of a right angle (d) $\frac{7}{6}$ right angles

2. Write down the name of each of the following solids.

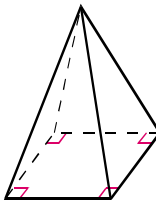
(a)



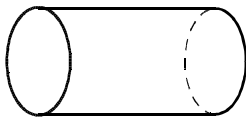
(b)



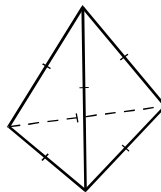
(c)



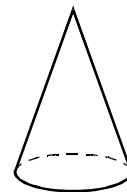
(d)



(e)



(f)



Chapter 4: Linear Equations in One Unknown

1. Solve the following equations.

(a) $3 + \frac{y}{3} = 14$

(b) $11 = \frac{x+13}{2}$

(c) $5 = \frac{1}{10}(7-y)$

(d) $\frac{q-5}{2} - \frac{1}{3} = 2$

(e) $-3(2x+1) = 3x$

(f) $\frac{1}{4}(x+1) - \frac{1}{2}(3x+1) = -9$

2. The selling prices of a postcard and a stamp are \$6 and \$1.4 respectively. Mandy paid \$95 for $2x$ postcards and $5x$ stamps. Find the total number of stamps.
3. In a party, the number of adults is 6 more than 9 times that of children. The total number of people there is 66. Find the number of adults in the party.
4. Mike has 4 times as many stamps as Kevin does. If Mike gives 16 stamps to Kevin, he still has 25 more stamps than Kevin does. How many stamps does each of them have originally?
5. A sum of money is just enough to buy 16 apples. If the price of each apple is reduced by \$0.5, 2 more apples can be bought with the same amount of money. How much is the sum of money?

6. Two months ago, the total weight of Leo and Wilson was 130 kg. They went to a fitness centre together for physical training. Now, the weight of Leo drops by $\frac{1}{4}$ and the weight of Wilson drops by $\frac{2}{7}$. If Leo weighs 5 kg less than Wilson at present, what were their respective weights two months ago?

Chapter 5: Percentages

- There are 40 students in S1A and 18 of them are girls. What percentage of students in S1A are boys?
- There are 800 pairs of sports pants in a box, where 30% of them are small-sized, 50% of them are medium-sized and the remaining are large-sized. How many pairs of pants are there for each size?
- A square has sides of 10 m each. If the length of each side of the square increases by 15%,
 - find the new area of the square.
 - find the percentage increase in the area of the square.
- Johnny sold a racket at a profit of 15% and he earned \$27.
 - Find the cost of the racket.
 - If Johnny sold the racket for \$243, find the percentage profit.
- The percentage loss is 20% when a calculator is sold for \$120. If a profit of 30% is to be made, what should be the selling price of the calculator?
- A furniture store offered a sale. Mr. Chun bought a wardrobe there at a discount of 30% and saved \$900. He also bought a shoe cabinet with a marked price of \$1 500 at a discount of 18%.
 - Find the marked price of the wardrobe.
 - Find the overall percentage discount in buying the wardrobe and the shoe cabinet.

Chapter 6: Statistics in Daily Life

- The following stem-and-leaf diagram shows the selling prices of second-hand pianos in Sun Piano Company.

Stem (\$1 000)	Leaf (\$1)
8	800 950
9	250 500 600 800
10	100 350 500 500 500 800 800
11	000 150 250 250 600
12	000 200 300 300 300 300 500 780
13	100 100 450 650 700 900 900
14	000 550 880
15	680 890 900 900

- How many data are recorded in the diagram above?

(b) Write down the selling price of the second-hand piano with price being the closest to but not higher than \$10 000.

(c) What is the difference between the highest price and the lowest price of the second-hand pianos?

(d) How many second-hand pianos have selling prices above \$14 000? What percentage of pianos do they account for?

Chapter 7: Algebraic Expressions and Polynomials

1. Simplify the following expressions.

(a) $-e^3 \times de^2$

(b) $(-3a^2b^3)^3$

(c) $\frac{25x^6y^2}{5x^4y}$

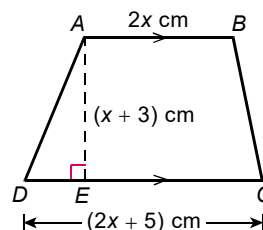
(d) $(2p^2q + 5qp - 12) - (9 + 6pq + 4p^2q - p^2)$

2. Expand the following expressions.

(a) $(8y - 8)(9 - 3y)$

(b) $(2m^2 - m)(7m^2 - 8m + 5)$

3. In the figure, $ABCD$ is a trapezium. $AB = 2x$ cm, $CD = (2x + 5)$ cm and $AE = (x + 3)$ cm. Find the area of the trapezium.



4. Marco bought $(2x + 3)$ apples at supermarket A for $\$(3y + 5)$ each, and he bought $(4x + 1)$ pears at supermarket B for $\$(2y + 3)$ each.

(a) How much did Marco spend on buying apples?

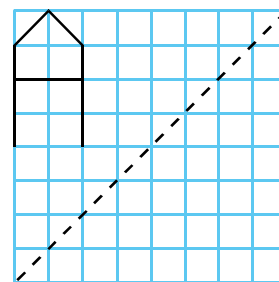
(b) How much did Marco spend on buying pears?

(c) Find the total amount spent on buying the apples and pears.

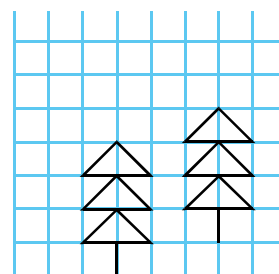
Chapter 8: Symmetry and Transformation

[In this exercise, a copy of each figure is provided in the Appendix.]

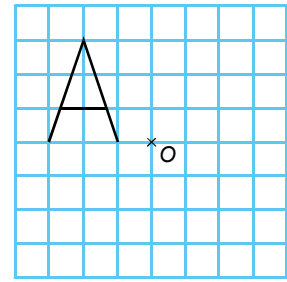
1. Draw the image after reflecting the figure along the dotted line.



2. Draw the image of translating the figure 2 units to the left and 3 units upwards.



3. Draw the image of rotating the figure about point O anti-clockwise through 90° .



Chapter 9 Introduction to Coordinates

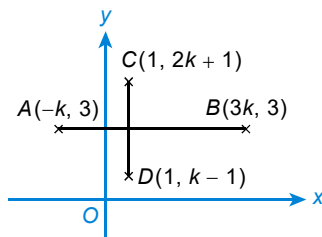
1. Find the distance between each pair of points below.

(a) $M(-2.8, 0.75), N(4.7, 0.75)$

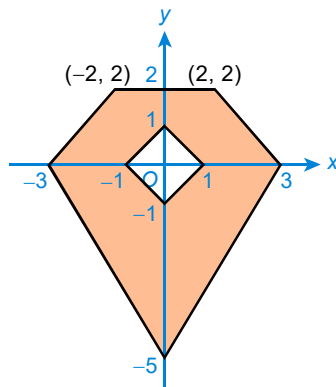
(b) $M(\frac{3}{4}, \frac{1}{3}), N(\frac{3}{4}, \frac{22}{3})$

2. If the distance between $A(4, b)$ and $B(4, 4b - 1)$ is 11 units, find all possible values of b .

3. In the figure, the length of AB is twice that of CD , find the value of k .



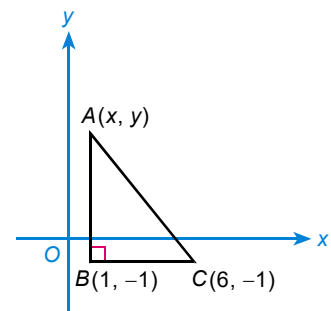
4. The following figure is symmetric about the y -axis. Find the area of the shaded region in the figure.



5. In the figure, ABC is a right-angled triangle.

- (a) Find the value of x .

- (b) If the area of $\triangle ABC$ is 20 square units, find the coordinates of A .



6. $A(k, 2)$ is translated 3 units to the right to B where k is a positive constant. After that, B is translated k units upwards and 1 unit to the left to C . If the area of $\triangle ABC$ is 3 square units, find the value of k and write down the coordinates of A , B and C .

Chapter 10: Statistical Graphs

1. The following shows the respective time taken by 20 students to finish 100 m, correct to the nearest 0.1 second.

13.1 14.2 13.1 15.2 13.4 14.0 14.8 13.2 14.0 13.5
13.0 13.9 13.4 14.3 14.8 15.0 14.2 14.7 13.4 13.0

- (a) According to the above data, complete the table below.

Time(second)	Class boundaries (second)	Class mark (second)	Tally	Frequency
13.0 - 13.4				
13.5 - 13.9				
14.0 - 14.4				
14.5 - 14.9				
15.0 - 15.4				

- (b) How many students take less than 13.95 seconds?

Chapter 11: Linear Equations in Two Unknowns

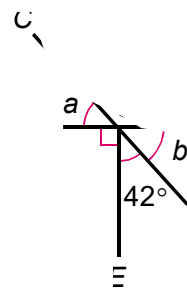
1. Which of the following points lie on the graph of the equation $y = 5x - 2$?
 $A(1, 3)$, $B(-2, -8)$, $C(0, 2)$, $D(-0.5, -4.5)$
2. If the graph of the equation $3x - 4y + 60 = 0$ cuts the x -axis and y -axis at points A and B respectively, find the coordinates of A and B .
3. Lily has x candies and y chocolates, and their values are \$1.2 each and \$2.2 each respectively.
- (a) Set up an equation in x and y if the total value of the candies and chocolates with Lily is \$27.4 after giving 2 candies and 1 chocolate to her sister.
- (b) According to the following table, find some possible number of candies and chocolates.
- | | | |
|-----|----|---|
| x | 23 | |
| y | | 8 |
4. It is known that the cost of each standard ticket of a space museum is \$10 and that of each concessionary ticket is \$5. Tony has bought some standard tickets and some concessionary tickets for \$35.
- (a) Let x and y be the number of standard tickets and concessionary tickets bought by Tony respectively. Set up an equation in x and y .
- (b) Draw a suitable straight line on a rectangular coordinate plane and find all possible number of standard tickets and concessionary tickets bought by Tony.

Chapter 12: Ratio and Rate

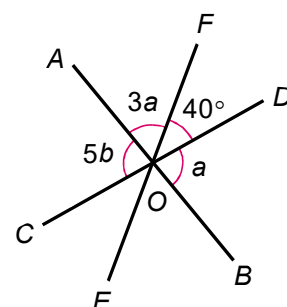
1. If $9 : 2 = 18 : (y - 3)$, find the value of y .
2. Keith divided \$6 000 in the ratio of $3 : 2 : 1$. Find the amount of the largest portion.
3. Find $x : y : z$ for each of the following.
 - (a) $y : x = 3 : 2, y : z = 9 : 7$
 - (b) $\frac{a}{b} = \frac{1}{2}, b = 3c$
4. Copper, zinc and silver are melted together into an alloy in the ratio of the weight of $4 : 5 : 6$. The weight of copper is 48 g. Find the weight of the alloy.
5. If 3 Australian dollars (AUD) can be exchanged for 18 Hong Kong dollars (HKD) and 2 US dollars (USD) can be exchanged for 15 Hong Kong dollars. How much USD can be exchanged for 5 AUD?
6. The ratio of mocha and latte in instant coffee package A of weight 10 kg is $2 : 3$. The ratio of mocha and latte in instant coffee package B of weight 8 kg is $7 : 3$. Kelly buys 1 package A and 1 package B.
 - (a) Find the weights of mocha and latte bought by Kelly.
 - (b) Kelly then sells mocha and latte at the selling prices of \$13.6/kg and \$16.6/kg respectively. Find the average selling price of the instant coffee per kg sold by Kelly.
7. It is given that the scale of map A of a city is $1 : 120\,000$ and the scale of map B showing the same city is $1 : 230\,000$. If the length of a road in the city is 2.3 cm on map A,
 - (a) find the actual length of the road
 - (b) find the length of the road on map B.

Chapter 13: Angles in Rectilinear Figures

1. In the figure, AOB and COD are straight lines. Find a and b .



2. In the figure, AOB and COD and EOF are straight lines. Find a .

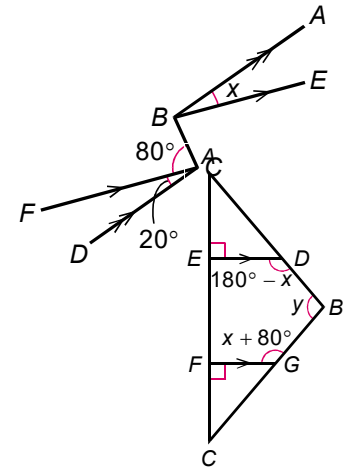


3. Find x in the figure.

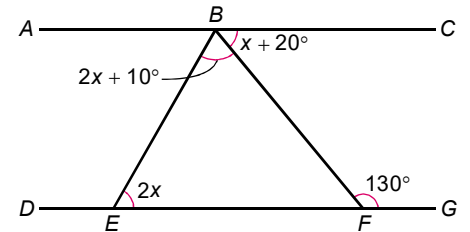
4. In the figure, $AB = BC$, $AEFC$, ADB and BGC are straight lines.

(a) Find x .

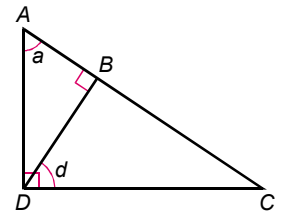
(b) Find y .



5. In the figure, ABC and $DEFG$ are straight lines. Prove that $AC \parallel DG$.



6. In the figure, ABC is a straight line. Prove that $a = d$.



<p>1.</p> 	<p>2.</p>	<p>3.</p> 
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