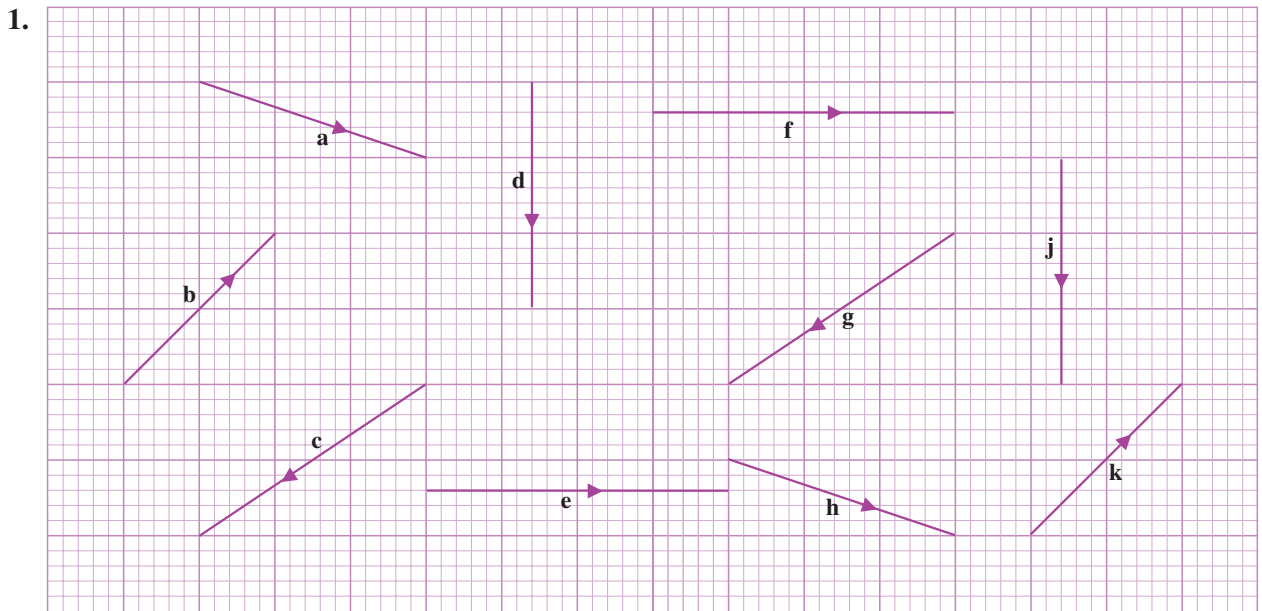
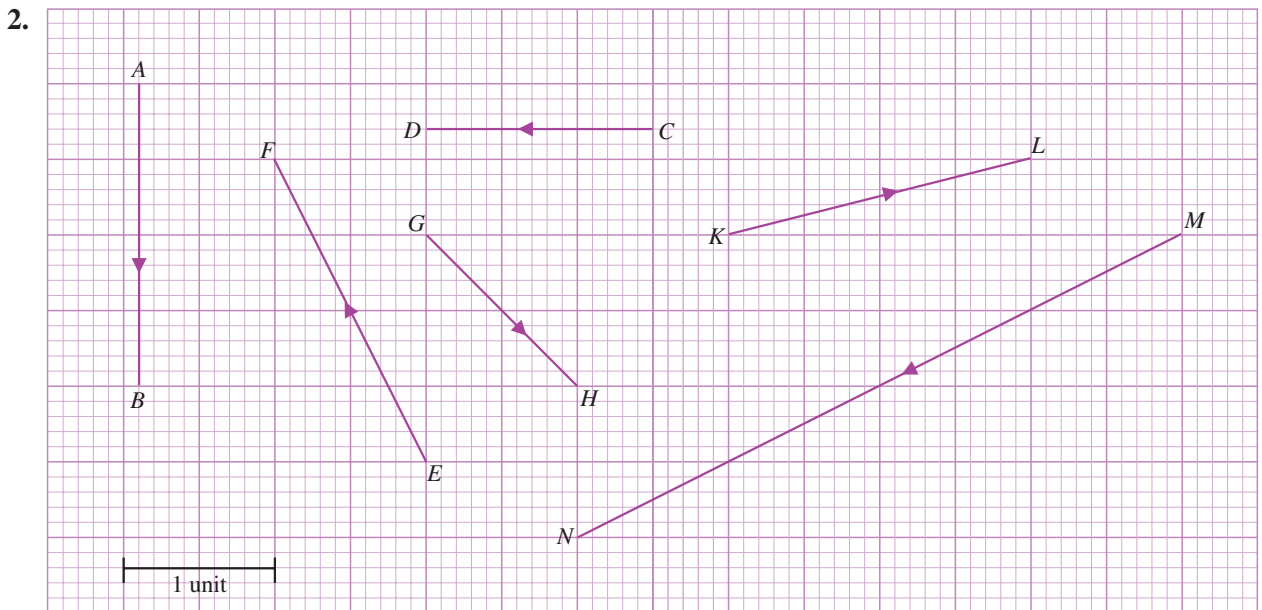


4 Vectors In Two Dimensions

Basic Practice



The diagram above shows 10 vectors. Identify and write down the vectors that are equal.



Refer to the diagram above. Find the magnitude and direction of each of the following vectors.

- | | | |
|---------------------------|---------------------------|---------------------------|
| (a) \overrightarrow{AB} | (b) \overrightarrow{CD} | (c) \overrightarrow{EF} |
| (d) \overrightarrow{GH} | (e) \overrightarrow{KL} | (f) \overrightarrow{MN} |

Revision Chapter 2

Percentage, Speed and Practical Mathematics

Content Outline	Notes
<p>2.1 Percentage</p> <ul style="list-style-type: none">expressing one quantity as a percentage of anothercomparing two quantities by percentagepercentage greater than 100%increasing/decreasing a quantity by a given percentagereverse percentageproblems involving percentages	<ol style="list-style-type: none">$1\% = \frac{1}{100}$ and $x\% = \frac{x}{100}$.The percentage of x in $y = \frac{x}{y} \times 100\%$.$n\%$ of $y = y \times n\%$. <p>A is $n\%$ higher than B means $A = B \times (1 + n\%)$.</p> <p>$100\% = 1$. When $n > 100$, $n\% > 1$.</p> <ol style="list-style-type: none">Increased value = Original value \times (1 + increase %)Decreased value = Original value \times (1 – decrease %) <p>If $n\%$ of y equals to x, then $y = x \div n\%$.</p> <ol style="list-style-type: none">Selling price = Marked price \times (1 – discount %)Goods and Services Tax (GST) = price of the commodity \times GST Rate, where GST Rate in 2008 is 7%.
<p>2.2 Speed</p> <ul style="list-style-type: none">concepts of speed, uniform speed and average speedconversion of units (e.g. km/h to m/s)	<ol style="list-style-type: none">Speed is the rate of change of distance over time. i.e. $\text{Speed} = \frac{\text{Distance travelled}}{\text{Time taken}}$Uniform speed means the speed is constant during the whole course.Average speed = $\frac{\text{Total distance travelled}}{\text{Total time taken}}$ <ol style="list-style-type: none">x km/h = $x \times \frac{1000}{3600}$ m/sy m/s = $y \times \frac{3600}{1000}$ km/h



Third Specimen Exam

Paper 1

Answer all the questions.
Use of calculator is allowed.

Time allowed: 2 hours

- (a) If an integer N is rounded off to the nearest 10, it becomes 50.
List all the possible values of N that are

 - even numbers,
 - prime numbers.

(b) Insert a pair of brackets on the left hand side of each of the following equality to make the equality correct.

 - $3 + 11 \times 7 - 5 = 25$
 - $28 - 4 + 28 \div 4 = 20$
- The speed of light is approximately 3×10^8 m/s.

 - Calculate the time taken, in seconds, for light to travel 2 km. Give your answer in standard form correct to 3 significant figures.
 - Express the answer in (a) correct to the nearest 100 nanosecond.
- Solve the following equations.

 - $\sqrt{2^x} = 64$
 - $5^{8+x} = 25^6$
 - $9^{2x+1} \times 27^{-x} = \left(\frac{1}{3}\right)^5$
- Khaleef and Jun Liang ran separately for the same distance to determine who is the faster sprinter. Suppose that Khaleef's time subtracted from Jun Liang's time is $(3xy - 18 - 6y + 9x)$ seconds.

 - Factorise completely $3xy - 6y - 18 + 9x$.
 - Who is the faster sprinter if y is positive and x is less than 2? Explain your answer.
- For each person, the proportion of a painting job that can be completed is directly proportional to the time spent. Working on their own, Hee Ming and Shahril can finish the painting job in 5 hours and 7 hours respectively.

 - How much time is needed to complete the painting job if Hee Ming and Shahril work together? Give your answer in hours and minutes.
 - Suppose that Hee Ming left after working with Shahril on the paint job for 1 hour. How much longer must Shahril spend on the paint job if he wants to complete it? Give your answer in hours and minutes.