Student Name: _____	**Grade**: _____
Date: _____	**Score**: _____

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5 Year 7 Term 3 Week 5 Homework

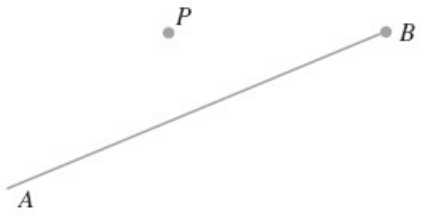
5.1 Angles

5.1.1 Perpendicular and parallel lines

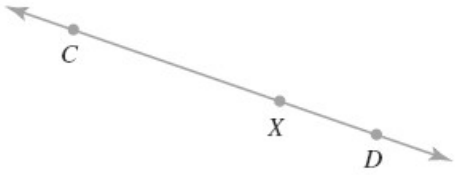
- Perpendicular lines are lines that intersect at right angles.
- The notation $\perp$ means 'is perpendicular to' (i.e. $AB \perp CD$).
- Parallel lines are lines the same plane that never meet.

Exercise 5.1.1

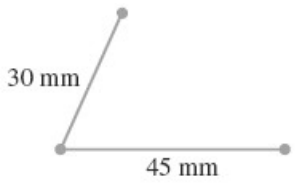
1. *Draw a line AB. Mark a point P, not on this line. Use your ruler and set square to draw another line: (A) through parallel to AB; (B) through P perpendicular to AB.*



2. *Draw a line CD and mark a point X on this line. Draw another line through X perpendicular to CD.*



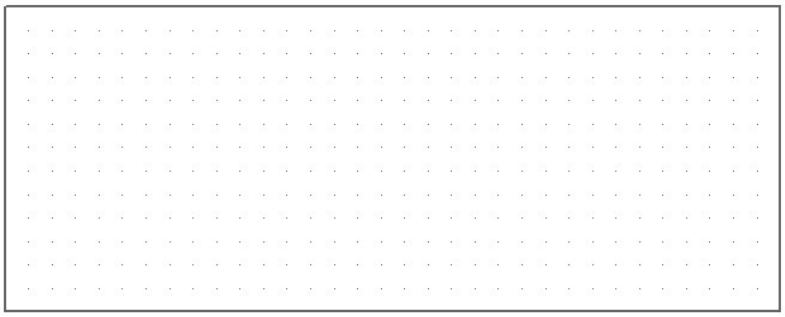
3. *Based on the 2 lines as shown, draw lines parallel to them to complete a parallelogram.*



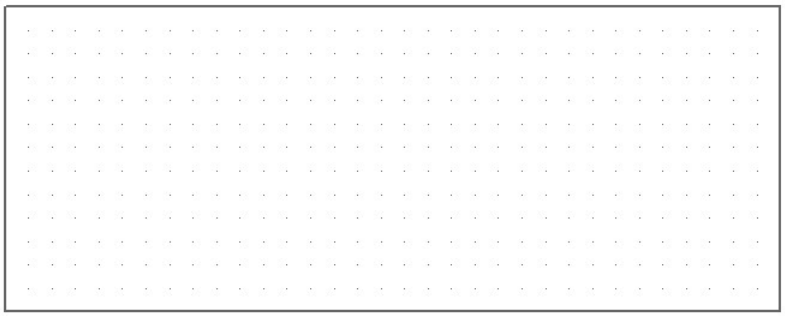
Exercise 5.1.2 Further application

1. *Use a set square to draw 2 lines that intersect at right angles. Join up the endpoints of the lines to form a quadrilateral.*

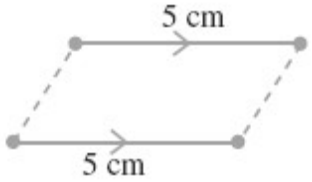
   (a) *What type of quadrilateral will you obtain if one of the perpendicular lines is bisected?*



   (b) *What type of quadrilateral will you obtain if both of the perpendicular lines are bisected?*



2. *Draw a pair of parallel lines 5 cm long as shown below.*

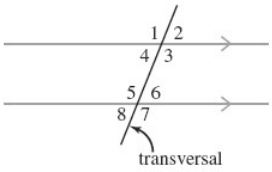


   (a) *Join the ends. Are these lines parallel?* _____

   (b) *What type of plane figure have you drawn?* _____

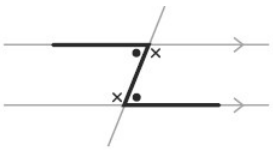
5.1.2 Angels in parallel lines

A line that cuts two or more parallel lines is called a transversal as shown below.



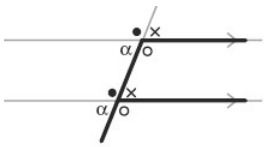
When a transversal is drawn to cut a pair of parallel lines, eight angles are formed. These angles can be classified as:

- Alternate angles:



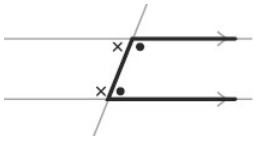
  - lie between the parallel lines and on opposite sides of the transversal
  - they are equal in size.
  - form a **Z shape**. (Z angle).

- Corresponding angles:



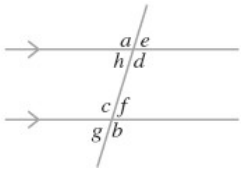
  - lie on the same side of the parallel lines and on the same side of the transversal
  - they are equal in size
  - form a **F shape** (F angle).

- Co-interior angles:



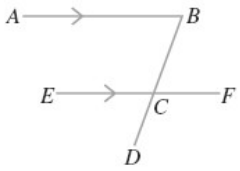
  - lie between the parallel lines and on the same side of the transversal
  - they are supplementary
  - form a **C shape** (C angle).

Exercise 5.1.3 For the following figure write down all pairs of:



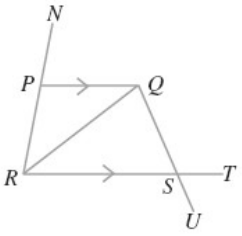
1. *alternate angles* _____
2. *co-interior angels* _____
3. *corresponding angles* _____

Exercise 5.1.4 Name the angle which is:



1. *alternate to* $\angle BCF$ _____
2. *Corresponding to* $\angle ABC$ _____
3. *co-interior to* $\angle ECB$ _____

Exercise 5.1.5 Name the angle which is:



1. *alternate to* $\angle QRS$ _____
2. *co-interior to* $\angle QPR$ _____
3. *corresponding to* $\angle PRS$ _____

5.1.3 Problem solving

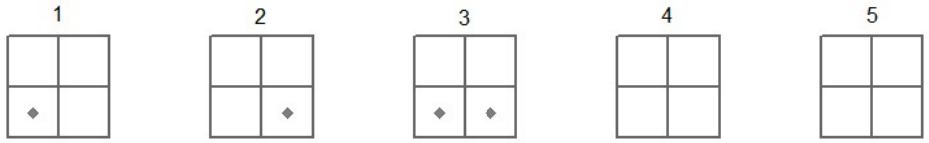
Exercise 5.1.6

1. *Joe is twice as old as his brother Philip. When Joe turns twenty, their combined ages will total thirty-five. How old they are now?*

2. *Mary wrote to 12 of her friends, sending either a letter or postcard. A letter cost 55 ¢ and a postcard 50 ¢, and she spent $6.40 on postage. How many letters and how many postcards did she send?*

3. *A 500 metre-long train is travelling at 60 km/h. How long will it take for the train to pass through a 2.5 kilometres tunnel?*

4. *Dot numbers! Using only one dot per square, we have represented numbers 1, 2, and 3.*



   (a) *Complete the next two squares.*

   (b) *What is the largest number can be represented by this dot square?* _____

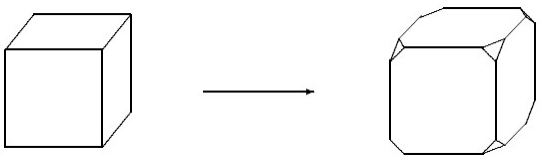
5. *I add up four consecutive odd integers. If the smallest one is 2m - 1, then the sum equals*

   (A) 8m-10 (B) 8m+2 (C) 8m+8 (D) 8m+10 (E) 8m+5

5.2 Miscellaneous exercises

Exercise 5.2.1

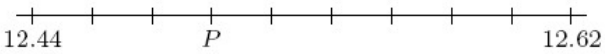
1. *A cube has all its corners cut off as shown. How many edges does the new shape have?*



2. *In her first five maths tests this year Carol had an average score of 80. In her next two tests she scored 65 and 55 and after her eighth test her average stood at 75. What is her eighth test score?*

3. *A rectangle is formed by four squares, as shown in the diagram. If the perimeter of this rectangle is 120 cm, what is the area of the rectangle?*

4. *Most of the number on this scale are missing. Assuming that the scale is uniform, the point P corresponds to a reading of:*

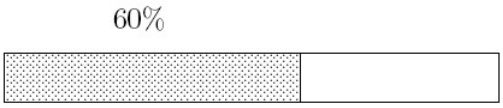


(A) 12.46 (B) 12.48 (C) 12.50 (D) 12.52 (E) 12.58

5.3 Math challenge

Exercise 5.3.1

1. *When copying a compact disc on a computer the dialogue box showed that the task was 60% complete. If it had taken 24 minutes so far, how long will it take to compete the whole task?*



2. *David thinks of 7 consecutive odd numbers. The sum of the smallest three is 33. What is the sum of the largest three?*

3. *If Ken starts counting from 1 and goes up in three: 1, 4, 7, . . . and Emma starts counting at the same time from 101 and goes down in twos at the same rate: 101, 99, 97, . . ., what is the same number they will say together?*

4. *In the diagram shown below PQ, RS and TU are straight lines and RS is parallel to TU. What is the value of $\angle PVS$, in degrees?*