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Central School

Home School Package

**Year :12 MATHEMATICS 2020**



**HOME SCHOOL PACKAGE CONTENT**

[**COORDINATE GEOMETRY**](#_Toc36047436)

[Lesson 1……….……………………………………………………………........................................3](#_Toc36047437)

Lesson 2................................................................................................................................................8

[Lesson 3……………….……………………………………………………………………………….1](#_Toc36047439)1

[Lesson 4………......................................................................................................................................16](#_Toc36047440)

[Lesson 5………………………..............................................................................................................21](#_Toc36047441)

**GEOMETRY & TRIGONOMETRY**

Lesson 6………………………………………………………………………………………………..26

Lesson 7………………………………………………………………………………………………..30

Lesson 8………………………………………………………………………………………………..34

Lesson 9………………………………………………………………………………………………..39

Lesson 10………………………………………………………………………………………………43

Lesson 11………………………………………………………………………………………………47

Lesson 12………………………………………………………………………………………………52

**CIRCLE GEOMETRY**

Lesson 13………………………………………………………………………………………………56

Lesson 14………………………………………………………………………………………………61

Lesson 15………………………………………………………………………………………………66

Lesson 16………………………………………………………………………………………………71

**PARENTS’ TASK**…………………………………………………………………………………….76

**LESSON Plan**

|  |  |
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| G:\Home Learning Packages\Documents for SHEFA Schools Principal\teacher-computer-icons-school-test-education-teaching.jpg Teacher | Name : Mrs. Suzanne Santhy  Subject : Mathematics |
| G:\Home Learning Packages\Documents for SHEFA Schools Principal\download.jpg  Date | Week : 5  Monday : 15/06/20 |
| G:\Home Learning Packages\Documents for SHEFA Schools Principal\title.jpg | Topic : COORDINATE GEOMETRY  Sub- Topic : Distance of a line  Lesson number : 1 |
| Learning outcomesLearning outcomes | * **SPECIFIC LEARNING OUTCOMES:** * **State/Identify** the distance formula. * **Calculate** the distance between two points using the Distance Formula. |
| TopicIntroduction | To find the distance between two points ( and  The distance formula is used to find the length of a line segment if you know the coordinates of the line endpoints.  \\SBS2011\RedirectedFolders\Suzanne\My Documents\My Pictures\Saved Pictures\download.png |
| Catch | Catch phrase for the lesson  Distance of a line segment is the distance between two points on the line. |
| Learners notes 1  Learners notes | Summary  To find distance of a line segment you need to know two two points on the line.  **Example 1:**  Calculate the distance between the points and .  **Solution:**  The points are : ,  *To find the distance, substitute the values of points to the distance formula:*    =  =  *d* = 8.60 (3 sf)  **Example 2:**  Ship A is 10 km south and 8 km west of a lighthouse. Ship B is 4 km north and 5 km east of the same lighthouse. What is the shortest distance between the two ships?  **Solution:**  *Draw the picture to feel for the question.*  Take the lighthouse as being at the origin . Apply the directions N,E,S,W to the axes. Then ship A is at and ship B is at      Lighthouse at (0,0)  Ship B  N    14  W  E        Ship A 13  S  Distance *d* is given by:            km (to nearest km) |
|  | YOUTUBE    <https://www.youtube.com/watch?v=0IOEPcAHgi4> |
|  | **Exercise :**   1. Calculate the distance between these pairs of points (to 4 sf if answer not exact): 2. (3, 1) and (6, 5) 3. (-2, -3) and (3, -15) 4. (-3, -3) and (-2, -2) 5. (6.1, 8.3) and (0.7, 1.9) 6. and      1. What is the distance of (-7, 24) from the origin? 2. Show that PQR with vertices P(2, 7) , Q(-1, 1) and R(5, 1) is isosceles. Name the pair of equal sides. 3. ABCD is a parallelogram, where A = (1, 1), B = (5,2), C = (6, 3) and   D = (2, 2). Calculate the length of the longest diagonal of ABCD.  *Solutions:*  1.a) 5 b) 13 c) 1.414 d) 8.374 e) 1.031  2. 25  3. PQ , PR  4. 5.385 |
| Assignment | **Note**: It is a must that you (students) do this package and complete it in time  allocated because assessments will be given later. |
| Assessment |  |
| Reference ClipartReferences | <https://www.onlinemathlearning.com/distance-formula.html>  Barton,D. (1992). Theta Mathematics |

**LESSON Plan**

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| G:\Home Learning Packages\Documents for SHEFA Schools Principal\teacher-computer-icons-school-test-education-teaching.jpg Teacher | Name : Mrs. Suzanne Santhy  Subject : Mathematics |
| G:\Home Learning Packages\Documents for SHEFA Schools Principal\download.jpg  Date | Week : 5  Tuesday : 16/06/20 |
| G:\Home Learning Packages\Documents for SHEFA Schools Principal\title.jpg | Topic : **COORDINATE GEOMETRY**  Sub- Topic : Midpoint of a Line  Lesson number : 2 |
| Learning outcomesLearning outcomes | * **SPECIFIC LEARNING OUTCOMES:** * **State/Identify** the formula for the midpoint of a line. * **Determine** the midpoint of a line given two points on the line. |
| TopicIntroduction | A **line segment** is the part of a line that lies *between* two points. If the two points are and then the coordinates of the midpoint will be :  .  \\SBS2011\RedirectedFolders\Suzanne\My Documents\My Pictures\Saved Pictures\Screen%20Shot%202012-03-25%20at%207.39.21%20AM.png |
| Catch | Catch phrase for the lesson  The **midpoint** of the line segment is the point that lies exactly halfway between the points. |
| Learners notes 1  Learners notes | Summary  You can use the midpoint formula to find the coordinates of the midpoint of a line segment if the endpoints are given.  **Example :**  Find the midpoint of the line segment AB, where A= (-2, 3) and B= (5,1).  **Solution:**  Endpoint coordinates are : A= (-2, 3) , B= (5, 1)    *Midpoint* =  *m* =  *m* =  *m* = |
|  | YOUTUBE  <https://www.youtube.com/watch?v=8lln-wsg0rU> |
|  | **Exercise :**   1. Find the coordinates of the midpoints of the line segments joining : 2. (4, 2) and (8, 6) b) (-8, 2) and (-1, 4) 3. and d) and      1. The coordinates of the midpoint of the line segment AB are (-2, 4).   If A= (6, -1), what are the co-ordinates of B ?   1. AB is the diameter of a circle. If A= (2, -6) and B= (4, 2), write down the co-ordinates of the centre of the circle. 2. A circle has centre (4, -5). If a diameter is PR and P = (8, 1), calculate the co-ordinates of R.   *Solutions :*   1. a) b) c) d) 2. 3. 4. |
| Assignment | **Note**: It is a must that you (students) do this package and complete it in time  allocated because assessments will be given later. |
| Assessment |  |
| Reference ClipartReferences | <https://www.tes.com/lessons/zzKtwjZiz2tvRA/distance-and-midpoint-formulas>  Barton,D. (1992). Theta Mathematics |

**LESSON Plan**

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| G:\Home Learning Packages\Documents for SHEFA Schools Principal\download.jpg  Date | Week : 5  Wednesday : 17/06/20 |
| G:\Home Learning Packages\Documents for SHEFA Schools Principal\title.jpg | Topic :  **COORDINATE GEOMETRY**  Sub- Topic : Gradient/slope of a Line  Lesson number : 3 |
| Learning outcomesLearning outcomes | * **SPECIFIC LEARNING OUTCOMES:** * **Identify** the gradient of a straight line from its equation, y = mx + c. * **Calculate** the gradient of the line from two points. * **Calculate** the gradient of a line using an angle . |
| TopicIntroduction | The gradient or slope of a line is a number that describes both the direction and the steepness of the line. If the equation of a line is in the gradient- intercept form *y=mx+c,* then *m* gives the *gradient* of the line, where *m* value is the coefficient of *x.*    Example:      The larger the gradient (m), the steeper the line. A *positive* gradient means the line slopes *upwards* from left to right. A *negative* gradient means the line slopes *downwards* from left to right |
| Catch | Catch phrase for the lesson  The gradient or slope of a line is the ***steepness*** of the line. |
| Learners notes 1  Learners notes | Summary   * **The gradient of a line can be calculated using the coordinates of two points.**   The gradient of the line through two points and is given by :  **Example 1:**  Find the slope of the line *PQ*  where *P* is the point and *Q* is thepoint *.*  **Solution:**  Gradient of *PQ =*  =    =   * **Finding gradient using an angle .**   If is the angle that the graph of a straight line makes with the *positive* direction of the *x-axis,* then is the *angle of inclination* of the straight line.  *y*  y    *m= tan x*  *m= tan*  Fig 1: The angle of inclination is an acute. Fig 2: The angle of inclination is an obtuse.  The slope or gradient of a line is the tangent of its angle of inclination. To find the gradient of a line using the angle of inclination, we use the formula:  *m = tan*    **Example:**  Find the gradient of a line using the angle of inclination:  i) ii)  **Solution:**   1. is an *acute* angle   *m = tan*  *m = tan*  *m =* 1     1. is an *obtuse* angle so the gradient will be a *negative*.   *m = tan*  *m = tan* |
|  | YOUTUBE  <https://www.youtube.com/watch?v=ADLoWIxKsyQ>  <https://www.youtube.com/watch?v=8trWFtwyUMU> |
|  | **Exercise :**   1. Calculate the gradient of the line passing through the pair of given points 2. (2, 7) and (1, 4) b) (-1, 5) and (4, 7)      1. Calculate the gradient of a line making the following angles with the positive direction of the 2. b) 3. Calculate the angles that the lines with these gradients make with the positive direction of the 4. 2 b) c) 5. Calculate the gradients of the lines drawn in the diagrams below : 6. b)         c) d)     1. The gradient of the line joining to is . Calculate the value of 2. A triangle ABC has vertices and Calculate the gradient of the line joining the midpoints of and   *Solutions :*  1. a) -3 b) 2. a) 0.4452 b) -1  3. a) b) c)  4. a) b) 1 c) 1.7 d) -2.7 5. 1 6. |
| Assignment | **Note**: It is a must that you (students) do this package and complete it in time  allocated because assessments will be given later. |
| Assessment |  |
| Reference ClipartReferences | Barton,D. (1992). Theta Mathematics |

**LESSON Plan**

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| G:\Home Learning Packages\Documents for SHEFA Schools Principal\download.jpg  Date | Week : 5  Thursday : 18/06/20 |
| G:\Home Learning Packages\Documents for SHEFA Schools Principal\title.jpg | Topic :  **COORDINATE GEOMETRY**  Sub- Topic : **Equations of Straight Lines**  Lesson number : 4 |
| Learning outcomesLearning outcomes | * **SPECIFIC LEARNING OUTCOMES:** * **Identify** the y intercept of the straight line from its equation, y = mx +c. * **Determine** the equation of a straight line from two given points. |
| TopicIntroduction | The equation of a straight line can be written in the *gradient intercept* form, , where *m and* c can be replaced by numbers. In this, form,   * *m* gives the gradient of the line. * *c* gives the *y-* intercept, the point where the line cuts the *y-axis.*   Example :   1. m=2 and c= -4 2. m = -3 and c= 5 3. m=-1 and c= 2 4. m=1 and c= 0 |
| Catch | Catch phrase for the lesson  The general equation of a straight line is *Ax + By + C = 0.* |
| Learners notes 1  Learners notes | Summary  The general equation of a straight line is *Ax + By + C = 0,* where *A, B* and *C* can be replaced by numbers. In the equation,the *x* term is always positive, but the *y* and the *c* term can be either positive or negative.  If you know two points that a line passes through then you can find the equation of a line using the equation formula.  The equation of a line passing through with gradient *m* is:  or  **Example 1:**  A line passes through the point and has a gradient of What is its equation?  **Solution:**  Gradient*(m) =*  and the point the lines through is .            **Example 2:**  Find the equation of the straight line passing through the two points *A* and .  **Solution:**  Firstly, you need to find the gradient of the line *AB* using the gradient formula                  Now, find the equation of the line by using the equation formula:    Use the gradient and one pair of coordinate point or .    *Let’s use .* |
|  |  |
|  | **Exercise :**   1. Express these straight line equations in the form 2. Find the equation for each of these lines and express your answer in the form 3. Through with gradient 2. 4. Through with gradient . 5. Find the equation of the line joining each of these pairs of given points : 6. and b) and 7. In each of the following, find the equation of the line which passes through the given point and intersects with the positive direction of the x at the given angle.  10. The points and lie on the circumference of a circle. What is the equation of the chord joining them ? 11. Find the equation of the line that cuts the at 4 and the *y-axis* at-2. 12. The points and are **collinear** ( that is all the points lie on the same line, which means that they should have the same gradient).   Calculate the value of *q.*  *Solutions :*  1. a) b)  c) d)  2. a) b)  3. a) b)  4. a) b)  5. 6. 7. |
| Assignment | **Note**: It is a must that you (students) do this package and complete it in time  allocated because assessments will be given later. |
| Assessment |  |
| Reference ClipartReferences | Barton,D. (1992). Theta Mathematics |

**LESSON Plan**

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| G:\Home Learning Packages\Documents for SHEFA Schools Principal\download.jpg  Date | Week : 6  Thursday : 22/06/20 |
| G:\Home Learning Packages\Documents for SHEFA Schools Principal\title.jpg | Topic :  **COORDINATE GEOMETRY**  Sub- Topic : Parallel and Perpendicular Lines  Lesson number : 5 |
| Learning outcomesLearning outcomes | * **SPECIFIC LEARNING OUTCOMES:** * **Identify** parallel or perpendicular lines. * **State** the relationship between gradients of parallel and perpendicular lines. * **Determine** the gradient of a perpendicular/parallel line. * **Find** the equation of a parallel/perpendicular lines. |
| TopicIntroduction | **Parallel Lines**  Parallel Lines are lines that never meet because the lines have the same distance in between. They also have the *same* gradients. |
| Catch | Catch phrase for the lesson  **Parallel Lines** are lines that never meet and **Perpendicular lines** are lines that *meet* at a point. |
| Learners notes 1  Learners notes | Summary  If a line with gradient is parallel to a line with gradient then    **Example 1:**  The line is parallel to the line . Find the gradients of the lines.  **Solution:**  Line 1: Line 2:    *m=2 m=2*  Line 1 and line 2 have the same gradient*(m)* = 2.  **Example 2:**  Find the equation of a straight line through the point parallel to  **Solution:**  The given line has the equation . In the gradient-intercept form the equation will be  The gradient of the line is  Therefore the line that is parallel to will have the same gradient *(since )*  To find the equation of the line through with the gradient , use the equation formula:          **Perpendicular lines** are lines that *meet* at a point because their gradients are *reciproca*l to each other. This means that their gradients multiply to give        If two perpendicular lines have gradients and then,  or  **Example 1:**  Show that the two lines and are perpendicular to each other.  **Solution*:***  The equation of the first line is In the gradient-intercept form the equation will be    Its gradient  The equation of the second line is . In the gradient-intercept form the equation will be    Its gradient  Now  This shows that the two lines are perpendicular. |
|  |  |
|  | **Exercise :**   1. Give the gradients of lines perpendicular to lines with these gradients : 2. 2 b) -8 c) d) 3. Find the equation of the line through parallel to the line      1. Find the equation of the line through (7, 2) parallel to the line      1. Find the equation of the line through perpendicular to the line 2. Find the equation of the line through perpendicular to the line . 3. Find the equation of the perpendicular bisector of the line joining and 4. A triangle is given by , and . What is the equation of the line through *B* parallel to *AC*?   *Solutions :*  1. a) b) c) d) 3 2.  3. 4. 5.  6. 7. |
| Assignment | **Note**: It is a must that you (students) do this package and complete it in time  allocated because assessments will be given later. |
| Assessment |  |
| Reference ClipartReferences | Barton,D. (1992). Theta Mathematics |

**LESSON Plan**

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| G:\Home Learning Packages\Documents for SHEFA Schools Principal\download.jpg  Date | Week : 6  Tuesday : 23/06/20 |
| G:\Home Learning Packages\Documents for SHEFA Schools Principal\title.jpg | Topic :  **GEOMETRY & TRIGONOMETRY**  **Sub-** Topic : Triangle trigonometry  Lesson number : 6 |
| Learning outcomesLearning outcomes | * **SPECIFIC LEARNING OUTCOMES:** * **Identify/State** the equation of sin x / cos x / tan x based on a right angle triangle. * **Identify** the sine, cosine or tangent function on a right angled   triangle |
| TopicIntroduction | If we know the length of one side of the right angled triangle, but we know the angles of the vertices, we can work out the lengths of the missing sides. We can do this by using **SOH, CAH, TOA** which are the three(3) trigonometry ratios.  sin =  cos =  tan =  opposite hypotenuse    adjacent |
| Catch | Catch phrase for the lesson  We use the abbreviation SOHCAHTOA to remember the three(3) trig. ratios or formulae. |
| Learners notes 1  Learners notes | Summary  **Example :**  Let’s find the length of BC on the triangle below :  If we look at the angle, BC is opposite this and we have the length of the hypotenuse. Remembering the trig. ratios, we need to use the sine formula, as sine uses *opposite* over *hypotenuse.*    **5 cm**  B A  sin() =  = *BC*  *BC* =1.710 cm (4 s.f)  If we had to find AB, we would use the sine formula :  cos ( =  = *AB*  *AB* = 4.698 cm (4 s.f)  If we are given the lengths of at least two of the sides of a right- angled triangle, we can find the angles of the two remaining angles using the same formulae. You will need to use the and functions on your calculator.  **Example :**  Find the unknown angle in the given triangle :  C  **6 cm**  B A  **8 cm**      **Solution :** To find the angle :  = tan =      (1 *d.p*) |
|  |  |
|  | **Exercise :**  1. Find the missing sides on each of these triangles :  a) C c) C    12cm  **6 cm**    B A A B  b) C    A B  3cm  2. Calculate the unknown angles for each of the following right-angled triangles  a)  10cm  4cm    b)  **Solutions :**  1. a) AB = 5.2 cm, BC = 3 cm  b) AC = 4.2 cm, BC = 3 cm  c) AB = 6.0 cm, AC = 12.3 cm  2. a)  b)  c)  9cm  18cm  c)  12cm  6cm |
| Assignment | **Note**: It is a must that you (students) do this package and complete it in time  allocated because assessments will be given later. |
| Assessment |  |
| Reference ClipartReferences | Barton,D. (1992). Theta Mathematics |

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| G:\Home Learning Packages\Documents for SHEFA Schools Principal\teacher-computer-icons-school-test-education-teaching.jpg Teacher | Name : Mrs. Suzanne Santhy  Subject : Mathematics |
| G:\Home Learning Packages\Documents for SHEFA Schools Principal\download.jpg  Date | Week : 6  Wednesday: 24/06/20 |
| G:\Home Learning Packages\Documents for SHEFA Schools Principal\title.jpg | Topic :  **GEOMETRY & TRIGONOMETRY**  Sub- Topic : Triangle Trigonometry  Lesson number : 7 |
| Learning outcomesLearning outcomes | * **SPECIFIC LEARNING OUTCOMES:** * Solve problems related to navigation, building, surveying and civil engineering using trigonometric ratios |
| TopicIntroduction | **Angles of Elevation and Depression**  The **angle of elevation** is the angle between a horizontal line from the observer and the line of sight to an object that is ***above*** the horizontal line.  The **angle of depression** is the angle between a horizontal line from the observer and the line of sight to an object that is ***below*** the horizontal line. |
| Catch | Catch phrase for the lesson  **Angle of elevation** is the angle between a horizontal line from the observer and the line of sight to an object that is ***above*** the horizontal line.  **Angle of depression** is the angle between a horizontal line from the observer and the line of sight to an object that is ***below*** the horizontal line. |
| Learners notes 1  Learners notes | Summary |
|  |  |
|  | 2.    3.  4. From the top of a vertical cliff 40 m high, the angle of depression of an object that  is level with the base of the cliff is . How far is the object from the base of the  cliff?  5. From a plane flying due east at 265 m above sea level, the angles of depression of  two ships sailing due east measure and. How far apart are the ships?  **Solutions:**  1. 23.5 m 2. 15.64 m 3. 12 m 4. 59.3 m 5. 189.9 m |
| Assignment | **Note**: It is a must that you (students) do this package and complete it in time  allocated because assessments will be given later. |
| Assessment |  |
| Reference ClipartReferences | Barton,D. (1992). Theta Mathematics |

**LESSON Plan**

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| G:\Home Learning Packages\Documents for SHEFA Schools Principal\teacher-computer-icons-school-test-education-teaching.jpg Teacher | Name : Mrs. Suzanne Santhy  Subject : Mathematics |
| G:\Home Learning Packages\Documents for SHEFA Schools Principal\download.jpg  Date | Week : 6  Thursday: 25/07/20 |
| G:\Home Learning Packages\Documents for SHEFA Schools Principal\title.jpg | Topic : GEOMETRY & TRIGONOMETRY  Sub- Topic : Triangle Trigonometry  Lesson number : 8 |
| Learning outcomesLearning outcomes | * **SPECIFIC LEARNING OUTCOMES:** * **Identify or state** the sine rule * Rearrange the sine rule formulae to make the required side or angle the subject of the formula. * **Apply** the sine rule to find an unknown side in a triangle. |
| TopicIntroduction | Most triangles are *not* right- angled however, and we use two special rules that apply to *any shape* of triangle.    We can use single letters to name *sides* and *angles* in a triangle.  B    A C  The diagram above shows triangle ABC .   * The three angles can be named A, B and C (capital letters) * To name sides it is logical to use the same letter as the angle *opposite* it. We use a lower-case letter to name a side in a triangle. In this triangle, the names or labels of the sides are *a, b* and *c.* |
| Catch | Catch phrase for the lesson    The **sine rule** can be used to work out the *missing sides* in triangles. |
| Learners notes 1  Learners notes | Summary  **THE SINE RULE**  **To calculate sides**  The sine rule can be used to work out missing side in triangles if sufficient information is given.  **The Sine rule :**        **Example :**  In triangle ABC, B = C = and AB = 9 cm. Find side *b* (AC).  **Solution :**  We are given two angles and one side and so the sine rule can be used. Since the angles in a triangle add up to then angle A = We know that AB(c) = 9 cm.      So we don’t need to use all 3 ratios, so exclude then use :  to find side *b*.  (cross multiply to solve the equation to find *b*)      cm ( 3 *s.f*) |
|  |  |
|  | **Exercise :**  Calculate the length marked *x* in each triangle. Give answers correct to 4 sf.    2.    .  3.  .  4.  8 cm  P  .  R  Q  .    **Solutions :**  1. 4.021 cm 2. 14.96 cm 3. 29.89 cm 4. 15.10 cm  . |
| Assignment | **Note**: It is a must that you (students) do this package and complete it in time  allocated because assessments will be given later. |
| Assessment |  |
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| G:\Home Learning Packages\Documents for SHEFA Schools Principal\download.jpg  Date | Week : 7  Monday : 29/06/20 |
| G:\Home Learning Packages\Documents for SHEFA Schools Principal\title.jpg | Topic : **Geometry & Trigonometry**  Sub- strand : Triangle Trigonometry  Lesson number : 9 |
| Learning outcomesLearning outcomes | * **SPECIFIC LEARNING OUTCOMES:** * Rearrange the sine rule formulae to make the required angle the subject of the formula. * **Apply** the sine rule to find an unknown angle in a triangle. |
| TopicIntroduction | **THE SINE RULE**  **To calculate angles**  The sine rule can be used to work out angle sizes in triangles if sufficient information is given. The most convenient way of working with the sine rule when calculating angles is to write the fractions upside down.  **The Sine rule :**    B  A  C |
| Catch | Catch phrase for the lesson  The **sine rule** can be used to work out angle sizes in triangles. |
| Learners notes 1  Learners notes | Summary  **Example :**  Calculate the size of angle  A B  The **sine rule** can be used to work out the *missing sides* in triangles.  The **sine rule** can be used to work out the *missing sides* in triangles.  6 The **sine rule** can be used to work out the *missing sides* in triangles.  8The **sine rule** can be used to work out the *missing sides* in triangles.    C The **sine rule** can be used to work out the *missing sides* in triangles.  **Solution :**  Firstly it’s a convenient approach to label the triangle :  A  *c* B  The **sine rule** can be used to work out the *missing sides* in triangles.  The **sine rule** can be used to work out the *missing sides* in triangles.  8The **sine rule** can be used to work out the *missing sides* in triangles.    *b*The **sine rule** can be used to work out the *missing sides* in triangles.  *a*The **sine rule** can be used to work out the *missing sides* in triangles.  6 The **sine rule** can be used to work out the *missing sides* in triangles.    C The **sine rule** can be used to work out the *missing sides* in triangles.  Write down the sine rule and substitute the given values from the diagram  Use only :  We have :      (1 *dp*) |
|  |  |
|  | **Exercise :**   1. Use the *sine rule* to calculate the angle marked in each triangle.   B    11 cm  A      10 cm    C  11 cm  19 cm   1. Calculate the angles marked and in these triangles :   10 cm  12 cm        24 cm  23 cm  **Solutions :**   1. 2. 3.   4. |
| Assignment | **Note**: It is a must that you (students) do this package and complete it in time  allocated because assessments will be given later. |
| Assessment |  |
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| G:\Home Learning Packages\Documents for SHEFA Schools Principal\download.jpg  Date | Week : 7  Tuesday : 30/06/20 |
| G:\Home Learning Packages\Documents for SHEFA Schools Principal\title.jpg | Topic :  **GEOMETRY & TRIGONOMETRY**  Sub- strand : Triangle Trigonometry  Lesson number : 10 |
| Learning outcomesLearning outcomes | * **SPECIFIC LEARNING OUTCOMES:**   I   * **Identify or State** the cosine rule. * **Apply** the cosine rule to find an unknown side in a triangle. |
| TopicIntroduction | **THE COSINE RULE**  The cosine rule is used to calculate the third side of a triangle when we are given measurements for two sides and the *included* angle (angle in between).  Refer the triangle shown below :    B  a  c  C  b  A   * The three angles can be named A, B and C (capital letters) * To name sides it is logical to use the same letter as the angle *opposite* it. We use a lower-case letter to name a side in a triangle. In this triangle, the names or labels of the sides are *a, b* and *c.* |
| Catch | Catch phrase for the lesson  The **cosine rule** is used to calculate the third side of a triangle. |
| Learners notes 1  Learners notes | Summary  **The cosine rule :**  *cos A*  *cos B*  *cos C*  **Example :**  Calculate side *x.*    *x* 17 m  22 m  **Solutions :**  Firstly, label the angles and sides of the triangle :  B    *x* 4 cm  A  5 cm  C  We know side *a* and side *b* and an angle C.  Therefore, the cosine rule to be used to find side c :  *cos C* |
|  |  |
|  | **Exercise :**  Use the cosine rule to calculate the unknown side in each triangle.              4.9 m  5.6 m     1. DEF : d = 29 m, e = 15 m, F = , find f. 2. XYZ : y = 31 m, z = 28 m, X = , find 3. A ship leaves port at 1pm travelling north at the speed of 30 miles/hour. At 3pm, the ship adjusts its course on a bearing of N E. How far is the ship from the port at 4pm ? (round to the nearest unit). 4. A ship sails from harbour K on a bearing of for 340 km until it reaches point It then sails on a bearing of for 160 km until it reaches point Q.   N  N  **Solutions :**  1. 4.595 cm 2. 7.94 cm 3. f= 39.1 m 4. *x*= 30.5 cm  5. 88.8 miles 6. 278 km  P  N  H  160 km  Q  Calculate the distance between point Q and the harbour. |
| Assignment | **Note**: It is a must that you (students) do this package and complete it in time  allocated because assessments will be given later. |
| Assessment |  |
| Reference ClipartReferences | Barton,D. (1992). Theta Mathematics |

**LESSON Plan**

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| G:\Home Learning Packages\Documents for SHEFA Schools Principal\teacher-computer-icons-school-test-education-teaching.jpg Teacher | Name : Mrs. Suzanne Santhy  Subject : Mathematics |
| G:\Home Learning Packages\Documents for SHEFA Schools Principal\download.jpg  Date | Week : 7  Wednesday : 01/07/20 |
| G:\Home Learning Packages\Documents for SHEFA Schools Principal\title.jpg | Topic :  **GEOMETRY & TRIGONOMETRY**  Sub-Strand : Triangle Trigonometry  Lesson number : 11 |
| Learning outcomesLearning outcomes | * **SPECIFIC LEARNING OUTCOMES:** * **Rearrange** the cosine rule formulae to make the required angle the subject of the formula. * **Apply** the cosine rule to find an unknown angle in a triangle. |
| TopicIntroduction | **THE COSINE RULE**  If the lengths of all three sides of a triangle are given, we can use the cosine rule to calculate the size of any angle in the triangle.    B  a  c  C  b  A |
| Catch | Catch phrase for the lesson  The **cosine rule** can be used to find an angle in a non right- angled triangle. |
| Learners notes 1  Learners notes | Summary  **The Cosine rule :**  **Example :**  Use the cosine rule to calculate the size of in this triangle.  B  3 cm  6 cm  C  5 cm  A  **Solutions :**  Firstly, label the angles and sides of the triangle :    B  3 cm  6 cm  C  5 cm  A  We are given three sides of the triangle and the cosine rule to be used to find angle *A* :      (1*dp)* |
|  |  |
|  | **Exercise :**  Use the cosine rule to calculate the unknown values to decimal place.  1.    2.    7.5 cm    4 cm  3. A triangular sail has measurements as shown in the diagram. All lengths are  in metres. Calculate the size of the largest angle.  8 m    6 m    4 m  4. A par 3 hole on a golf course the tee is a distance of 130 metres due west  from the pin. On his first shot, Bruce hits the ball 100 metres but not at the  correct angle. On his second shot he hits the ball 35 metres and gets it in the  hole. On what bearing, , did he hit his first stroke?    35 m  100 m  N    130 m  **Solution :**  1. 2. 3. 4. |
| Assignment | **Note**: It is a must that you (students) do this package and complete it in time  allocated because assessments will be given later. |
| Assessment |  |
| Reference ClipartReferences | Barton,D. (1992). Theta Mathematics |

**LESSON Plan**

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| G:\Home Learning Packages\Documents for SHEFA Schools Principal\teacher-computer-icons-school-test-education-teaching.jpg Teacher | Name : Mrs. Suzanne Santhy  Subject : Mathematics |
| G:\Home Learning Packages\Documents for SHEFA Schools Principal\download.jpg  Date | Week : 7  Thursday : 02/07/20 |
| G:\Home Learning Packages\Documents for SHEFA Schools Principal\title.jpg | Topic :  **GEOMETRY & TRIGONOMETRY**  Sub-Strand : Triangle Trigonometry  Lesson number : 12 |
| Learning outcomesLearning outcomes | * **SPECIFIC LEARNING OUTCOMES:** * **Use** the general area formula Area A = ½ absinC to find the area of   a triangle |
| TopicIntroduction | **AREA OF A TRIANGLE – Two sides and the ‘included angle’**  We can use trigonometry to calculate the area of a triangle if we know the lengths of two sides and the size of the angle between the *two* sides.  This angle is often referred to as the **included** angle.      **included angle**  a  C  b |
| Catch | Catch phrase for the lesson  Trigonometry can be used to calculate the area of a non right- angled triangle. |
| Learners notes 1  Learners notes | Summary  We can find the area of non right – triangles by using the formula :  **Area of a triangle formula :**  **Example :**  Calculate the area of this triangle :    15 cm  8 cm  **Solutions :**  B  Label the triangle :    c  a    A  15 cm  b  C  8 cm    (4 sf) |
|  |  |
|  | **Exercise :**  1. Calculate the areas of these triangles :  a)  3 cm    2 cm  b)  7 m  8 m  2. Calculate the area of this isosceles triangle :    3 cm  3 cm          3. An isosceles triangle has two sides of length 11 cm, and its area is .  Calculate the sizes of the interior angles.    11 cm    11 cm  4. An equilateral triangle has an area of . Calculate the length of each  side.  5. This metal badge has rotational symmetry of order 3. Calculate its area if the  distance from the centre to each corner is 5 cm.  **Solutions :**  1.  b)  2.  3.  4. 15.2 cm  5.  5 cm  5 cm  5 cm |
| Assignment | **Note**: It is a must that you (students) do this package and complete it in time  allocated because assessments will be given later. |
| Assessment |  |
| Reference ClipartReferences | Barton,D. (1992). Theta Mathematics |

**LESSON Plan**

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| G:\Home Learning Packages\Documents for SHEFA Schools Principal\teacher-computer-icons-school-test-education-teaching.jpg Teacher | Name : Mrs. Suzanne Santhy  Subject : Mathematics |
| G:\Home Learning Packages\Documents for SHEFA Schools Principal\download.jpg  Date | Week : 8  Monday : 06/07/20 |
| G:\Home Learning Packages\Documents for SHEFA Schools Principal\title.jpg | Topic :  **GEOMETRY & TRIGONOMETRY**  Sub-Strand : Circle Geometry  Lesson number : 13 |
| Learning outcomesLearning outcomes | * **SPECIFIC LEARNING OUTCOMES:** * **Identify** angle needed and use the appropriate relations:   ,   * **Define** radian * **State** the value of in degrees or radians * **Convert** angle size from radians to degrees and vice versa |
| TopicIntroduction | **RADIAN MEASURE**  Up to now we have measured angles in **degrees**. A more natural method is to define a new unit, called a **radian**. We all learn to use **degrees** when measuring angles, but most science and engineering applications use radians.  1 radian = the angle formed in a sector with the arc length the same as the radius.  1 Radian |
| Catch | Catch phrase for the Lesson  **One way to measure angles is in radians.** |
| Learners notes 1  Learners notes | Summary  This definition does not depend on the size of the sector. If a sector is drawn with twice the radius and twice the arc length, the angle at the centre is still 1 radian- radian measure us sometimes called **circular measure.**    **Conversion of degrees / radians**  If we take a full turn , the arc length is just the circumference :  and radians =  To convert **degrees** to **radians**,  Multiply by  Often it is best to leave your answer in terms of  **Example (i) :**  Convert to radians. Leave your answer in terms of  **Solution :**    To convert radians to degrees  Multiply by  **Example (ii) :**  Convert radians to degrees.  **Solution :**  What is 1 radian in degress ?    One radian is the angle at the centre of a sector with an arc length equal to its radius.  **1 radian**  The angle if 1 radian looks as though it could be close to . To be precise :  1 radian = |
|  |  |
|  | **Exercise :**  1. Convert these angle measurements to radians in terms of  2. Convert these angle measurements to radians to 4 s.f.  a)  b)  c)  3. Convert these angle measurements to degrees :  a)  b)  c)  4. Convert these radian measurements to degrees. Give your answers to 1 dp.  a) 0.613  b) 2  c)  **Solutions :**  1. a) b) c) 2. a) 0.5411 b) 3.665 c) 9.233  3. a) b) c) 4. a) b) c) |
| Assignment | **Note**: It is a must that you (students) do this package and complete it in time  allocated because assessments will be given later. |
| Assessment |  |
| Reference ClipartReferences | Barton,D. (1992). Theta Mathematics |

**LESSON Plan**

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| G:\Home Learning Packages\Documents for SHEFA Schools Principal\teacher-computer-icons-school-test-education-teaching.jpg Teacher | Name : Mrs. Suzanne Santhy  Subject : Mathematics |
| G:\Home Learning Packages\Documents for SHEFA Schools Principal\download.jpg  Date | Week : 8  Tuesday : 07/07/20 |
| G:\Home Learning Packages\Documents for SHEFA Schools Principal\title.jpg | Topic :  **GEOMETRY & TRIGONOMETRY**  Sub- strand : Circle Geometry  Lesson number : 14 |
| Learning outcomesLearning outcomes | * **SPECIFIC LEARNING OUTCOMES:**   I   * **Identify** the arc of the circle together with the angle subtended at the centre and the radius * **Use** the formula for the length of an arc of a circle * **Identify** length of the arc * **Identify** and apply the formula for finding the length of an arc of a circle :   where measured in radians. |
| TopicIntroduction | **ARC LENGTH** |
| Catch | Catch phrase for the lesson  The arc length is the measure of the distance along the curved line making up the arc. |
| Learners notes 1  Learners notes | Summary |
|  |  |
|  | **Exercise :**        **Solutions**:  1. a) 6 cm b) c) 6.283 cm  2. a) 3.2 m b) 12 cm  c) 20.03 cm  3.a) 4 b) 4.712  4. a) b)  5. a) 13.05 mm  b) 51.77 cm |
| Assignment | **Note**: It is a must that you (students) do this package and complete it in time  allocated because assessments will be given later. |
| Assessment |  |
| Reference ClipartReferences | Barton,D. (1992). Theta Mathematics |

**LESSON Plan**

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| G:\Home Learning Packages\Documents for SHEFA Schools Principal\teacher-computer-icons-school-test-education-teaching.jpg Teacher | Name : Mrs. Suzanne Santhy  Subject : Mathematics |
| G:\Home Learning Packages\Documents for SHEFA Schools Principal\download.jpg  Date | Week : 8  Wednesday : 08/07/20 |
| G:\Home Learning Packages\Documents for SHEFA Schools Principal\title.jpg | Topic :  **GEOMETRY & TRIGONOMETRY**  Sub-Strand : Circle Geometry  Lesson number : 15 |
| Learning outcomesLearning outcomes | * **SPECIFIC LEARNING OUTCOMES:** * **Identify** the area of a sector of a circle * **Apply** the formula for finding the area of a sector |
| TopicIntroduction | **SECTOR AREA FORMULA**  The area of a sector is given by the formula :  Area  (Note : is in radians) |
| Catch | Catch phrase for the lesson  The area enclosed by a sector is proportional to the arc length of the sector. |
| Learners notes 1  Learners notes | Summary  **Example (i) :**    **Solution :**      **Example (ii) :**    **Solutions :** |
|  |  |
|  | **Exercise :**      **Solutions :**  1. a. 16 m2  b. 25.66 cm2 c. 11.76 cm2 2. a. 2.25 b. 78.0o  3. 4. a. 4224 cm2 b. 7494 cm2 c. 36% |
| Assignment | **Note**: It is a must that you (students) do this package and complete it in time  allocated because assessments will be given later. |
| Assessment |  |
| Reference ClipartReferences | Barton,D. (1992). Theta Mathematics |

**LESSON Plan**

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| G:\Home Learning Packages\Documents for SHEFA Schools Principal\teacher-computer-icons-school-test-education-teaching.jpg Teacher | Name : Mrs. Suzanne Santhy  Subject : Mathematics |
| G:\Home Learning Packages\Documents for SHEFA Schools Principal\download.jpg  Date | Week : 8  Thursday : 09/07/20 |
| G:\Home Learning Packages\Documents for SHEFA Schools Principal\title.jpg | Topic :  **GEOMETRY & TRIGONOMETRY**  Sub-Strand : Circle Geometry  Lesson number : 16 |
| Learning outcomesLearning outcomes | * **SPECIFIC LEARNING OUTCOMES:** * Find the area of segment using the area of a sector of a circle:      * **Verify** how the area of the segment of a circle is equal to the area of the sector minus the area of the triangle. * **Calculate** the area of a segment of a circle |
| TopicIntroduction | **AREA OF A SEGMENT**  The area enclosed by a chord and an arc of a circle is called a **segment** (shown **shaded** on the diagram). |
| Catch | Catch phrase for the lesson  The area of the segment equals the area of the sector *minus* the area of the triangle formed. |
| Learners notes 1  Learners notes | Summary  The area of a segment can be found by subtracting the area of a triangle OAB from the area of a sector OAB.  The area of a segment    OR  **Example :**    Calculate :  i) the area of the kite  ii) the shaded area  **Solution :** |
|  |  |
|  | **Exercise :**      **Solutions :**  1. a. 194.4 cm2 b. 151.0 cm2 c. 43.41 cm2 2. a. 5.77 cm b. 61.4 cm2 3. 3.82 cm2 4. a. 1.21 m2 b. 5.05 m |
| Assignment | **Note**: It is a must that you (students) do this package and complete it in time  allocated because assessments will be given later. |
| Assessment |  |
| Reference ClipartReferences | Barton,D. (1992). Theta Mathematics |



**WEEKLY CHECKLIST For Parents**:

Term: 2 Week number 1 Date…… to…… Month: …………

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Subject** | **Number of lessons** | **Days** | **Tick when activity is complete** | **Parents comment** | **Signature** |
|  | **1** |  |  |  |  |
|  | **2** |  |  |  |  |
|  | **3** |  |  |  |  |
|  | **4** |  |  |  |  |
|  | **5** |  |  |  |  |
|  | **6** |  |  |  |  |

Term: 2 Week number 2 Date…… to…… Month: …………

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| **Subject** | **Number of lessons** | **Days** | **Tick when activity is complete** | **Parents comment** | **Signature** |
|  | **1** |  |  |  |  |
|  | **2** |  |  |  |  |
|  | **3** |  |  |  |  |
|  | **4** |  |  |  |  |
|  | **5** |  |  |  |  |
|  | **6** |  |  |  |  |

Term: 2 Week number 3 Date…… to…… Month: …………

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| **Subject** | **Number of lessons** | **Days** | **Tick when activity is complete** | **Parents comment** | **Signature** |
|  | **1** |  |  |  |  |
|  | **2** |  |  |  |  |
|  | **3** |  |  |  |  |
|  | **4** |  |  |  |  |
|  | **5** |  |  |  |  |
|  | **6** |  |  |  |  |

Term: 2 Week number 4 Date…… to…… Month: …………

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| **Subject** | **Number of lessons** | **Days** | **Tick when activity is complete** | **Parents comment** | **Signature** |
|  | **1** |  |  |  |  |
|  | **2** |  |  |  |  |
|  | **3** |  |  |  |  |
|  | **4** |  |  |  |  |
|  | **5** |  |  |  |  |
|  | **6** |  |  |  |  |

Term: 2 Week number 5 Date…… to…… Month: …………

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| **Subject** | **Number of lessons** | **Days** | **Tick when activity is complete** | **Parents comment** | **Signature** |
|  | **1** |  |  |  |  |
|  | **2** |  |  |  |  |
|  | **3** |  |  |  |  |
|  | **4** |  |  |  |  |
|  | **5** |  |  |  |  |
|  | **6** |  |  |  |  |

Term: 2 Week number 6 Date…… to…… Month: …………

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| **Subject** | **Number of lessons** | **Days** | **Tick when activity is complete** | **Parents comment** | **Signature** |
|  | **1** |  |  |  |  |
|  | **2** |  |  |  |  |
|  | **3** |  |  |  |  |
|  | **4** |  |  |  |  |
|  | **5** |  |  |  |  |
|  | **6** |  |  |  |  |

Term: 2 Week number 7 Date…… to…… Month: …………

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| **Subject** | **Number of lessons** | **Days** | **Tick when activity is complete** | **Parents comment** | **Signature** |
|  | **1** |  |  |  |  |
|  | **2** |  |  |  |  |
|  | **3** |  |  |  |  |
|  | **4** |  |  |  |  |
|  | **5** |  |  |  |  |
|  | **6** |  |  |  |  |

Term: 2 Week number 8 Date…… to…… Month: …………

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| **Subject** | **Number of lessons** | **Days** | **Tick when activity is complete** | **Parents comment** | **Signature** |
|  | **1** |  |  |  |  |
|  | **2** |  |  |  |  |
|  | **3** |  |  |  |  |
|  | **4** |  |  |  |  |
|  | **5** |  |  |  |  |
|  | **6** |  |  |  |  |

Term: 2 Week number 9 Date…… to…… Month: …………

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| **Subject** | **Number of lessons** | **Days** | **Tick when activity is complete** | **Parents comment** | **Signature** |
|  | **1** |  |  |  |  |
|  | **2** |  |  |  |  |
|  | **3** |  |  |  |  |
|  | **4** |  |  |  |  |
|  | **5** |  |  |  |  |
|  | **6** |  |  |  |  |

Term: 2 Week number 10 Date…… to…… Month: …………

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| **Subject** | **Number of lessons** | **Days** | **Tick when activity is complete** | **Parents comment** | **Signature** |
|  | **1** |  |  |  |  |
|  | **2** |  |  |  |  |
|  | **3** |  |  |  |  |
|  | **4** |  |  |  |  |
|  | **5** |  |  |  |  |
|  | **6** |  |  |  |  |

Term: 2 Week number 11 Date…… to…… Month: …………

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| **Subject** | **Number of lessons** | **Days** | **Tick when activity is complete** | **Parents comment** | **Signature** |
|  | **1** |  |  |  |  |
|  | **2** |  |  |  |  |
|  | **3** |  |  |  |  |
|  | **4** |  |  |  |  |
|  | **5** |  |  |  |  |
|  | **6** |  |  |  |  |

Term: 2 Week number 12 Date…… to…… Month: …………

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| **Subject** | **Number of lessons** | **Days** | **Tick when activity is complete** | **Parents comment** | **Signature** |
|  | **1** |  |  |  |  |
|  | **2** |  |  |  |  |
|  | **3** |  |  |  |  |
|  | **4** |  |  |  |  |
|  | **5** |  |  |  |  |
|  | **6** |  |  |  |  |

Term: 2 Week number 13 Date…… to…… Month: …………

|  |  |  |  |  |  |
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| **Subject** | **Number of lessons** | **Days** | **Tick when activity is complete** | **Parents comment** | **Signature** |
|  | **1** |  |  |  |  |
|  | **2** |  |  |  |  |
|  | **3** |  |  |  |  |
|  | **4** |  |  |  |  |
|  | **5** |  |  |  |  |
|  | **6** |  |  |  |  |