

Chapter 1 : Introduction to Trigonometry Module - Lesson Worksheet 2

This activity, which takes place on the first day and is the focus of the lesson, helps students understand the concept of the sum of the interior angles of a triangle through the use of MP2 - reasoning abstractly and quantitatively.

To create and sustain a fire three factors must be present. The three factors are known as the fire triangle Peige ed. The fire triangle consists of oxygen, a fuel source, and heat. The fuel may be any flammable substance. The heat source needs only to match the ignition temperature of the fuel. In a fire involving arson the arsonist will have tampered with one or more of the factors in the fire triangle. The arsonist may increase the fuel load by introducing flammable material or by adding accelerants such as kerosene, gasoline or alcohol French, The arsonist may increase the oxygen content of a structure by opening windows or punching holes in ceilings and walls French, Fire will follow the highest concentration of oxygen to its source. By ventilating a structure at the top and starting a fire at the bottom of the structure an arsonist can cause the fire to race upward through the structure. The fire will rapidly involve the whole structure rather than be confined to one room. An arson fire involves the introduction of a heat source that can be as simple as a match or as complex as chemicals with very low ignition temperatures Battle, By definition a fire is considered an arson fire when all other accidental caused have been ruled out. To say that the cause of a fire was arson and therefore deliberate, the investigator must have sufficient evidence the one of the factors in the fire triangle was tampered with. The Fire Fighters Arson investigations start with the observations of the fire fighters who respond to the scene. The fire fighters may not see any obvious signs of arson but may get a feeling that the fire is not behaving normally Kennedy, Battle , French , There may be obvious signs of arson such as multiple points of origin or the presence of accelerants. What ever it is that raises the suspicions of the fire fighters at the scene it is their observations that initiate an arson investigation. At this point the investigation deviates from the procedures used in a normal criminal investigation. In an investigation of a fire where arson is suspected the investigator starts the interviewing of witness and fire fighters immediately Kennedy, It is essential for the investigator to interview the fire fighters who were the first to arrive at the fire and those who fought the fire. Fire will often destroy evidence of arson. As well, the water and chemical foam used by the fire fighters may destroy evidence. The first fire fighters on the scene may have noticed evidence that may not exist by the time the fire is extinguished. The arson investigator will ask specific questions aimed at revealing suspicious conditions with in the structure and around the fire scene. The arson investigator will ask the following questions. What was the color of the smoke? Different substances produce smoke in a variety of colors Lane, The color of the smoke can indicate what is burning. The investigator can then determine whether a particular substance would normally be found with in the structure. For example, gasoline produces a yellow or white flame with black smoke Lane, Wood produces a yellow or red flame and grey or brown smoke Lane, If a burning wooden house is producing thick black smoke this could indicate the presence of gasoline. A large amount of gasoline being stored in a house is unusual and raises the suspicion that gasoline was used as an accelerant. Were there inoperative hydrants, standpipes, alarm systems or sprinkler systems? If there were the investigator will direct plumbing and other trades experts to examine the systems for signs of damage French, Kennedy, What was the condition of the doors and windows? Signs of forced entry can indicate an actual break and enter or indicate a staged scene. Doors and windows propped open could indicate an attempt to ventilate the building allowing the fire to spread through out the structure. Doors and windows that have to be forced open could indicate an attempt to hinder the fire fighters. Doors and windows that have been blocked out could indicate an attempt to conceal the fire until it is fully involved Peige, ed. Rapid spread of a fire can indicate the use of accelerants. Multiple points of origin, flashes and explosions can also indicate accelerants or incendiary devices French, Peige, ed. It is possible that the fire fighters have seen the same person in the crowd at several fires. Some arsonists like to watch the fire or help the firefighters. If the fire fighters do notice the same person at several suspicious fires the investigator must try to interview this person as so as possible Kennedy, Did the structure contain business equipment or household items normally expected to be present? The absence of normal household items or business equipment can indicate that they were removed before the fire started.

DOWNLOAD PDF STEP 2: INVESTIGATE THE TRIANGLE OF FOCUS

Removal of these items can indicate that the fire was planned. Removal of sentimental items such as baby picture, school records and valuables can indicate a planned fire. Evidence of pre-planning a fire gives the investigator excellent proof of intent to commit arson.

Chapter 2 : Investigate/Verify Properties Of Triangles by Alex saunders on Prezi

Step 3 - the ability rationalise the crime - is the final stage in the fraud triangle. This is a cognitive stage and requires the fraudster to be able to justify the crime in a way that is acceptable to his or her internal moral compass.

How can we prove this fact? Today we will be proving the sum of the angles of a triangle. I will show you how to do this using an equilateral triangle and you will complete the rest of the activity on your own with the isosceles and scalene triangles. Then, you will use the facts you proved to answer some questions and word problems. Continue to think about the following questions as you work: How can you apply what you learn to the math problems you will complete at the end of the investigation? The following directions for cutting triangles should also be written on the board Step 1: Cut around the triangle. Mark each angle with a different color. Cut the angles off along the dotted lines. Tape the angles side by side to create a straight line. Once students begin completing the rest on their own, I will be walking around to help students with the following likely struggles: Lining up the angles. If students struggle, explain: Think of it as a puzzle. Facing away from the bottom of the paper Line up the angles to create a semi-circle. Have students tape their angles on the line provided on their paper. Advise students that it is important to cut as neatly as possible, as it affects the accuracy of the lines created I am also asking some essential questions to spiral throughout this activity: What did all the interior angles of this triangle create when we put them together this way? What else can we call it? If they do not understand how to solve, they must raise their hand and either I or another student will help guide them through the work. This activity, which takes place on the first day and is the focus of the lesson, helps students understand the concept of the sum of the interior angles of a triangle through the use of MP2 "reasoning abstractly and quantitatively." The linked website is a great resource for understanding and using mathematical practices to push students learning. Day - Task - sum of the interior angles of a triangle - - As I walk around while students are working in pairs, I bring back the essential questions from the day before and add more for the new material: What did we find in the investigation yesterday? Is the sum of the interior angles of ANY triangle degrees? Did you all notice the angle, side and equivalence symbols used at the top of each page? If we are missing the measure of an angle, how can we use what we know about the other angles to find the missing one? I also make sure to share out the questions I was asking as I walking around with the rest of the class to further check for understanding Day - Class Work - sum of the interior angles of a triangle - - This picture must already be drawn on the blackboard for us to review in the closing section. I review by asking students to call on each other and guide me to write the steps for solving on the board. Some key questions to end the class include: How many degrees make up half a turn? How many degrees are there in a triangle? Do you think this is true of all polygons? Why or why not? I have students take 5 minutes to free write the answer to this last question on the second day on a half sheet of paper so that I have some feedback on the material or concepts I need to continue to spiral in our future lessons. Homework is distributed by a student helper at the end of each lesson and students are dismissed. Day - HW - Angles and triangles - -

Chapter 3 : How to Keep Your Health Triangle Healthy | Healthy Living

Taylor and Francis Short Term Object Relations Couples Therapy. Print version: Short-Term Object Relations Couples Therapy The Five-Step Model; Copyright; Contents.

Determining the feasibility of conducting an epidemiologic study Step 4: Conducting an epidemiologic study to assess the association between cancers and environmental causes. These steps update the four-stage process discussed in the Guidelines but should be implemented with two qualifiers. First, the extent to which a health agency is able to follow these guidelines depends on existing resources and infrastructure. Second, the delineation between the steps is not necessarily fixed. Often, a health agency might choose to combine steps or to pursue a problem with several approaches. The four-step process is intended to be flexible, so that health agencies and their partners may use it as model guidelines and adapt it to their own existing protocols, resources, staffing, organizational systems, and policies. Initial Contact and Response Description The purpose of Step 1 is to collect information from the inquirer i. On the basis of the information collected, the health agency will need to decide whether to pursue the inquiry further. This step focuses on obtaining and evaluating whatever information the inquirer can provide as well as relevant data available to the health agency e. The inquirer should be referred quickly to the responsible unit in the health agency, and the problem should not be dismissed prematurely i. In addition, other necessary background information should be gathered including demographic characteristics e. Not only is this information essential to the scientific investigation, but it is also important for effective information-gathering, communication and coordination with the inquirer or community. In addition, it is essential for the effective management of a suspected cancer cluster inquiry to be open, transparent, and thorough with respect to the evaluation of information and actions taken. The responder should gather identifying information on the inquirer: However, the responder should comply with requests for anonymity and explain that the inability to follow up with the caller might hinder further investigation. The responder should gather initial data on the potential cluster from the inquirer: Keep in mind that the inquirer might not know the true primary cancer diagnoses and will most likely not be aware of all cases of cancer in this area or during the period of concern. The responder should gather information from the inquirer about any specific environmental hazards or concerns, other risk factors e. The decision might require discussions with other people in the health agency. Multiple factors bear on this decision, but it is primarily based on whether the evidence as presented fits the definition of a cluster and the biologic plausibility that the cancers could share a common etiology. Such factors as reports involving a rare cancer or an atypical demographic distribution of a certain type of cancer e. If exposure to a specific environmental contaminant is a concern in the community, the consensus in the scientific literature regarding an association between the environmental contaminant and the cancer of concern should be considered. Factors that do not support the need for further investigation include: For example, the rationale for not pursuing an investigation could be that the reported cancers are unlikely to be related to plausible environmental exposure. If an inquirer is reporting an event that is not a suspected cancer cluster but rather one involving a known or possible environmental contamination, the caller should be referred to the appropriate environmental resources agency. The health agency should provide responders with talking points about the nature of cancer, its frequency and occurrence, how different types of cancers reported are related to separate causes, that rates of disease do somewhat increase and decrease in a population over time random fluctuations , and so forth. These points can be used to educate inquirers about cancer and to provide them with further resources that address their concerns. If the information provided supports the decision to investigate the cancer concerns further, the health agency responder should notify the inquirer, explain what that entails and outline how the agency will follow-up with the inquirer and provide results. The responder should ask the inquirer if there are others in the community e. The responder should have training and experience in risk communication because, understandably, community residents can be extremely distressed by the perception of an excess amount of cancer in their community The ability to make a judgment on the facts presented and to communicate the factors in that judgment clearly depends on having both scientific expertise and experience in communication.

The responder should be knowledgeable about cancer, cancer prevention, and guidelines on investigating suspect cancer clusters. If one person in the health agency with comprehensive expertise is available, the responder should then discuss the case with colleagues who have the necessary expertise before responding to the caller with an initial judgment. The health agency and responder can access, at minimum, county-level cancer statistics from the state cancer registry to understand and explain the reported cases in an appropriate context. A list of state cancer registries is available at <http://www.cancer.gov>. If possible, the responder should be, or become, relatively familiar with the geographic area of concern, its demographic profile, and its history.

Decision to Close the Investigation at Step 1 A decision at Step 1 not to pursue an investigation is based on the determination that the reported cases are unlikely to comprise a cancer cluster; therefore conducting a statistical assessment to determine whether an excess of cancer cases exists might be unsuccessful because the cancers are not likely to share a common, environmental etiology. This determination might involve multiple communications with the inquirer, as well as additional data-gathering. If the inquirer acknowledges and is satisfied with the decision not to move forward, the inquiry can be closed at this point. If the inquirer is not satisfied with the decision and the verbal explanation, then the health agency should consider providing a written explanation and include resources related to the decision. Regardless of the decision, the health agency should document in a permanent log all information about the inquiry and the decision.

Decision to Continue to Step 2 The data gathered at this point might suggest the need for further evaluation. If so, the health agency should elect to proceed to Step 2 to determine whether an excess of cancer cases exists.

Assessment Description The primary purpose of Step 2 is to determine whether the suspected cancer cluster is a statistically significant excess. Several components of the follow-up investigation are necessary to determine if an excess of cancer cases exists in the community. These important components include the study design, as well as the collection, analysis, and interpretation of relevant data. Decisions must be made concerning the case definition, how the population of concern the study population is defined, the choice of comparison cancer rates, and the choice of statistical methods. To address these components, the health agency investigation team the investigators leading the follow-up investigation of Step 2 and subsequent steps will need to have epidemiologic expertise or collaborate with an epidemiologist. The time needed to complete Step 2 varies, depending on the complexity of the suspected cancer cluster. This step also includes identification of local environmental concerns. Depending on the circumstances, communicating with partners and identifying and communicating with key community members about the assessment might be appropriate as a part of this step. Creating a comprehensive communication plan is important, in order to identify audiences, communication needs, and communication channels. More detailed information is provided elsewhere see Appendix B.

Calculating a standardized incidence ratio (SIR) 23,24 is recommended at this step. The SIR is generally calculated to provide an estimate of the likelihood that an excess of cases exists in the population of concern the study population compared to the general or reference population. The SIR is a ratio of the number of observed cases to the number of expected cases. The observed cases are the cases that actually occurred in the study population within a specific timeframe. The expected number of cases is the number that would occur in the study population if the occurrence of cancer in that population was the same as the reference population. Since cancer rates vary with age, the expected number takes into account the age distribution in the study population. It is calculated by multiplying the age specific cancer incidence rates of the reference population by the corresponding age specific group in the study population. In the calculation of the SIR, factors that must be considered include: More detailed information is provided see Appendix C.

Procedures The investigators should define the study population, by demographic characteristics, geographical area and time period of concern. These factors, in addition to cancer type, are also included in the case definition: The study population could be all-inclusive, or it could be limited to a specific demographic group. For example, the study population could include females only, adults only, or children only. The appropriate geographic area study area and time period need to be selected. Privacy issues should be considered when collecting, analyzing, and presenting data on a few cases in a small geographic area. Statistical analysis of neighborhood level data or data from sparsely populated areas might not be possible because of limited numbers. Limited numbers might lead to a lack of statistical power and therefore to an instability of rates. Decisions about

timeframe and geographic boundaries should take into consideration the concerns of the caller or community, as well as any known or suspected environmental contamination and pathways of contamination. The case definition includes information on the type of cancer e. Cases might be limited to a specific age or sex e. An all-cancer SIR i. If an all-cancer SIR is presented with the results, a discussion of its limitations for investigating etiologies and its usefulness for cancer education should be included. The case definition, study population, study area, and period of interest will require justification. The definitions and the justification should be transparent to the community so that they understand the rationale behind the approach taken. This means sharing information that is consistent, timely, and expressed in a manner that the lay public is able to understand. Otherwise, these decisions might be seen as arbitrary and thus be rejected by the community. Procedural steps are discussed in detail elsewhere see Appendix C. The SIR increases when the number of observed cases in excess of the number of expected cases increases. In addition to whether the SIR is statistically significant, the investigators should consider the suspected cluster in the context of the plausibility that the cancers could share a common etiology based on the latency, on community patterns of migration in and out, known risk factors for the cancer of concern, and the potential for exposure to a contaminant of concern, as well as other factors see " Decision to close the investigation at Step 2 ". The investigator should understand community concerns and identify facts about local environmental factors by: The investigator should communicate with the inquirer and the community as indicated see Appendix B. In many cases, communication about the activities in this step is only with the inquirer. However, if communitywide concerns exist about the cancer cases or environmental conditions, early involvement of other community members might be appropriate. The investigator should share the SIR calculation with the inquirer and other community residents and describe the process, the results, and the implications of the results. The investigator should consider who else should be notified after the SIR determination that there is, or is not, an excess number of cases e. Recommendations for Step 2 Because of the variety of issues involved in this phase of the investigation, a team approach involving epidemiologists, toxicologists, communicators, and other experts might be necessary. Health agencies should document all decisions communications, and processes. The purpose of this examination to identify other factors that might affect trends or excess cancer cases detected. If all cancers appear elevated or depressed in a similar time frame including those that are not related , other factors ought to be considered. These factors include the possibility that the estimated denominator might be incorrect or that the community has an unusually high proportion of persons with high-risk health behaviors e. Decision to Close the Investigation at Step 2 The decision to close the inquiry at this step or to move forward to Step 3 is based on multiple factors. The decision to move forward is best made on the basis of a review of the statistical analysis as well as an understanding of the scientific facts presented. To interpret the SIR, the health agency must answer these questions: Are there enough cases and a large enough population for statistical stability 17,23,26?

Chapter 4 : The Centroid Theorem

The problem analysis triangle is the basis for another useful analytic tool - a classification of the three main kinds of problems that confront police and a theory about how these problems arise.

Step 8 Most criminological theories focus on what makes people "criminal". They find causes in distant factors, such as child-rearing practices, genetic makeup, and psychological or social processes. These theories are very difficult to test; are of varying and unknown scientific validity; and yield ambiguous policy implications that are mostly beyond the reach of police practice. But you will find that the theories and concepts of environmental criminology and of the new discipline of crime science are very helpful in everyday police work. This is because they deal with the immediate situational causes of crime events, including temptations and opportunities and inadequate protection of targets. You will be a stronger member of the problem-oriented team if you are familiar with these concepts. The problem analysis triangle also known as the crime triangle comes from one of the main theories of environmental criminology - routine activity theory. This theory, originally formulated by Lawrence Cohen and Marcus Felson, states that predatory crime occurs when a likely offender and suitable target come together in time and place, without a capable guardian present. It takes the existence of a likely offender for granted since normal human greed and selfishness are sufficient explanations of most criminal motivation. And it defines a capable guardian in terms of both human actors and security devices. This formulation led to the original problem analysis triangle with the three sides representing the offender, the target, and the location, or place see inner triangle of the figure. By directing attention to the three major components of any problem, the inner triangle helps to ensure that your analysis covers all three. Police are used to thinking about a problem in terms of the offenders involved - indeed, the usual focus is almost exclusively on how to identify and arrest them. But POP requires that you explore a broader range of factors and this requires information about the victims and the places involved. The latest formulation of the problem analysis triangle adds an outer triangle of "controllers" for each of the three original elements see figure: Guardians also include public police and private security. For the offender, this is the handler, someone who knows the offender well and who is in a position to exert some control over his or her actions. Handlers include parents, siblings, teachers, friends and spouses. Probation and parole authorities often augment or substitute for normal handlers. For the place, the controller is the manager, the owner or designee who has some responsibility for controlling behavior in the specific location such as a bus driver or teacher in a school, bar owners in drinking establishments, landlords in rental housing, or flight attendants on commercial airliners. Problem Analysis Triangle The problem analysis triangle is the basis for another useful analytic tool - a classification of the three main kinds of problems that confront police and a theory about how these problems arise. John Eck and William Spelman have proposed classifying such problems as "wolf," "duck" and "den" problems: Repeat offending problems involve offenders attacking different targets at different places. These are ravenous WOLF problems. An armed robber who attacks a series of different banks is an example of a pure wolf problem. Wolf problems occur when offenders are able to locate temporarily vulnerable targets and places. The controllers for these targets and places may act to prevent future attacks, but the offenders move on to other targets and places. It is the lack of control by handlers that facilitates wolf problems. Repeat victimization problems involve victims repeatedly attacked by different offenders. These are sitting DUCK problems. Taxi drivers repeatedly robbed in different locations by different people is an example of a pure duck problem. Duck problems occur when victims continually interact with potential offenders at different places, but the victims do not increase their precautionary measures and their guardians are either absent or ineffective. Repeat location problems involve different offenders and different targets interacting at the same place. These are DEN of iniquity problems. A drinking establishment that has many fights, but always among different people, is an example of a pure den problem. Den problems occur when new potential offenders and new potential targets encounter each other in a place where management is ineffective. The setting continues to facilitate the problem events. Note that pure wolf, duck, and den problems are rare. Most problems involve a mixture. The question is, which is most dominant in a given problem: When

crime is occurring, all inner elements of the triangle must be present and all outer elements weak or absent. If potential offenders are constantly present, for example, but crimes occur only when guardians are absent, then rescheduling guardians might be a useful solution. Ask yourself, "What does the problem analysis triangle look like before, during, and after crimes? In short, right from the beginning, it helps you to focus data collection on those six aspects most likely to lead to practical solutions. What is Crime Science? Traditional criminology seeks to improve understanding of the psychological and social forces that cause people to become criminals in the hope of finding ways to change these causes. Crime science takes a radically different approach. It focuses not on the reasons why criminals are born or made, but on the act of committing crime. It seeks ways to reduce the opportunities and temptations for crime and increase the risks of detection. In doing so, it seeks contributions from a wide range of disciplines, including psychology, geography, medicine, town planning, and architecture. Crime science explicitly seeks to be judged by the extent to which it helps to reduce crime on our streets, and in our homes and businesses. Jill Dando Institute for Crime Science.

Chapter 5 : - NLM Catalog Result

MAFSG Draw (freehand, with ruler and protractor, and with technology) geometric shapes with given conditions. Focus on constructing triangles from three measures of angles or sides, noticing when the conditions determine a unique triangle, more than one triangle, or no triangle.

The Centroid Theorem This lesson contrasts two methods of proving geometrical theorems and motivate the main theorem of this course. The medians of a triangle are concurrent. Medians meet at their nether trisectors. Click image to download centroid. This means that any two medians meet at their point two-thirds of the way from the vertex to the midpoint of the opposite side. So all three do. So the two triangles are similar. Two pairs of their angles have already been shown to be equal. Thus the two triangles are similar. Medians of a triangle are concurrent at the centroid of a triangle. Proof in the style of Descartes Direct observation of a few examples suggests that the medians of a triangle not only meet at the same point, but that this point is two-thirds of the way from the vertex to the midpoint of the opposite side on each median. Call this point the "nether trisector" for short. Generalization One way that mathematics progresses is to generalize a theorem. In the above we have already seen how to strengthen the conclusion of the Centroid Theorem as stated at the beginning. Not only are the medians concurrent, we know exactly where on each median the common point is located. You should use KSEG to follow this discussion. First we restate the theorem in a way that makes it clear what the hypotheses and the conclusions are. We might investigate the case that the triangle becomes a more general polygon, for instance a quadrilateral. Or we might consider what happens if the triangle acquires another dimension and becomes a tetrahedron. You might experiment with KSEG to see if you can discover any theorems about "medians". Of course, you need to also generalize the notion of median. There are three such ratios, and you might never guess what the relationship is between them when concurrency happens. We pursue these ideas in subsequent lessons. Corrected 10sep09 by WYS.

Chapter 6 : Crime Analysis for Problem Solvers in 60 Small Steps

Activity 2 Task 1 Step 1: Draw a triangle ABC and cut out the three angles.. Step 2: Rearrange the three angles to form a straight angle on a straight line.. So, the angle sum of a triangle is \hat{A}° .

Chapter 7 : Arson Investigation | Crime & Clues

Exterior Angles and Opposite Interior Angles of a Triangle In this investigation you will discover the relationship between the measure of an exterior angle of a triangle and each of the two nonadjacent interior angles.

Chapter 8 : Angle Sum of a Triangle

Step 1: Apply simSAS to $\triangle AC'B'$ and $\triangle ABC$ by noting that they have $\angle A$ in common, and the adjacent sides are in the ratio of $\$$. So the two triangles are similar.

Chapter 9 : \hat{A} » The Six-Step Guide to Believing in the Purity of Qatar™s Winter World Cup

Step 2 Use a ruler to mark point D along the ray so that $QD = QD$. Step 3 Repeat Steps 1 and 2 for points E and F to locate points \hat{a} and $E F$. Connect points $D \hat{a}$.