1. Probability ***December 1991***

1. What is the probability that a 6-letter word chosen from the letters in the word "factoring" ends with "a" and begins with "f"?

Ans. _____

2. There are 12 people in a room. The number of permutations of N of these people is 120 times the number of combinations of N of these people. Find N.

Ans. _____

3. Find all real value(s) of x such that the sum of the last four terms of $(x-2)^5$ is 128.

Ans. _____

1. Probability ***December 1992***

1. The sum of the first three terms in the expansion of $\left(\frac{3}{4}+\frac{1}{6}\right)^6$ is $\frac{3^A 7^B}{2^C}$. Find the sum of A, B and C.

Ans. _____

2. Urn I contains 5 red and 4 black balls. Urn II contains 4 red and 5 black balls. 2 balls are selected at random. If both are red, what is the probability that both came from the same urn?

Ans. _____

3. In how many ways can four envelopes be placed in three mailboxes, if each mailbox can obtain any number of envelopes? (All envelopes are the same)

Ans. _____

1. Probability ***December 1993***

1. When students get sodas from a machine at a certain school, 3 out of every 5 students choose a Pepsi. What is the probability that, of the next 5 students who get a soda, 3 get a Pepsi and 2 do not? (Express your answer as a fraction in simplest form.)

Ans. _____

2. The Acme Electronics Company ordered 1000 computer chips. Of those, 600 were purchased from supplier *A*, 300 from supplier *B*, and 100 from supplier *C*. It is known that 10% of supplier *A*'s chips, 20% of supplier *B*'s chips, and 25% of supplier *C*'s chips are defective. If a chip selected at random is good, what is the probability that it came from supplier *B*? (Give answer as a fraction in simplest form.)

Ans. _____

3. The digits 0, 1, 2, 3, 5, 7 are used to make all possible 3-digit numbers with distinct digits. If a number is selected at random from this set, what is the probability that it is even and greater than 300?

Ans. _____

1. Probability ***December 1994***

1. Three coins are tossed. What is the probability that the result is more than one head, if at least one head shows?

Ans. _____

2. Each member of a nine person committee has a probability of $\frac{1}{2}$ of attending a certain meeting. What is the probability that at least $\frac{2}{3}$ of the committee attends the meeting? Find answer as an exact fraction.

Ans. _____

3. There are blue, yellow and silver tokens in a container. A token is drawn at random. The probability of drawing a blue or silver token is $\frac{2}{3}$. The probability of drawing a blue or yellow token is $\frac{3}{4}$. There are 42 of the yellow and silver tokens combined. Find the number of tokens of each color.

Ans. _____

1. Probability ***December 1995***

1. Let set A contain 43, 68, 73, 78, 80, 88, 92, 70, 75, 65, and 52. Find the difference of the means of sets P and Q, where P is the set of numbers of set A which are greater than the mean of set A, and Q is the set of numbers of set A which are less than the mean of set A.

Ans. _____

2. Harold is a regular customer at a Ron's Soda Shop. The menu contains three items: soda, hamburgers and fries. Ron has noticed that Harold's probability of ordering a hamburger is .85 and that of ordering fries is .7. What is the probability that Harold orders more than a soda the next time he enters? Give answer to nearest thousandth. Assume that Harold always orders soda.

Ans. _____

3. A local lottery selects 6 numbers at random from the set of whole numbers from 1 to 12. What is the probability that the second smallest number selected is 5? Express as a fraction in simplest form.

Ans. _____

1. Probability ***December 1996***

1. Rob has a nickel, 2 dimes and 2 quarters in his pocket. If he selects 3 coins at random, what is the probability that he gets 40 cents? Express answer in simplest fractional form.

Ans. _____

2. The data below is a sample of weights of girls at Bronton High School, which has 240 girls enrolled. Determine the sample standard deviation for the data. Round to nearest hundredth.

Ans. _____

128	130	108	116	141
133	112	129	119	102
142	125	130	128	113
106	156	141	145	125
121	124	123	109	116

3. Tickets are numbered from 100 to 400. If a ticket is chosen at random, what is the probability that the number is a multiple of 3 or 5 but not both? Give exact answer.

Ans. _____

1. Probability ***December 1999***

1. On 40% of the days Barbara wears blue shoes; on 30% of the days Samuel wears blue shoes; and on 20% of the days Mary wears blue shoes. They select their shoes independently of each other. Find the probability that, on a given day, Barbara and Samuel will wear blue shoes and Mary will not. Express your answer as a decimal.

Ans. _____

2. A box contains 3 red, 5 green, 4 yellow, ad 6 white balls. 6 balls are selected at random. What is the probability that 1 red, 3 green and 2 white balls are selected? Give answer to nearest 1000th or as a fraction reduced to lowest terms.

Ans. _____

3. Three fair dice are tossed at random. What is the probability that the three numbers that turn up can be arranged to form an arithmetic progression with a common difference greater than or equal to 1. Give exact answer as a fraction.

Ans. _____

2. Exponents and Radicals ***December 1988***

1. Find the value of $\dfrac{6}{3^{-1}+2^{-1}}+\left(1-\sqrt{2}\right)^2-25^{-\frac{1}{2}}+\sqrt[4]{64}$

Ans. _____

2. Order these numbers from the smallest to the largest $3^{22},\ 4^{14},\ 9^{10},\ 8^{10}$

Ans. _____

3. Find the value(s) of x and y so that $25\cdot 2^{x+1}=16y$ and $2\cdot 5^{x-1}=5y$

Ans. _____

2. Exponents and Radicals ***December 1989***

1. Simplify: $\dfrac{\dfrac{5}{\sqrt{3}}+\sqrt{3}}{\dfrac{2}{\sqrt{3}}+1}$

Ans. _____

2. Find all real numbers x so that $4^x+4^{x+1}=160$

Ans. _____

3. Find all real numbers t such that $t+2=\sqrt{4+t\sqrt{8-t}}$

Ans. _____

2. Exponents and Radicals ***December 1991***

1. Simplify: $\dfrac{5x^0-1}{125^{\frac{2}{3}}} \div \dfrac{(5x)^0+3}{\left(9^2+12^2\right)^{\frac{1}{2}}}$

Ans. _____

2. Simplify: $\sqrt{2\sqrt{63}+\dfrac{2}{8+3\sqrt{7}}}$

Ans. _____

3. Find the solution set within the real numbers for x in the equation:

$$\sqrt{x+7}+\sqrt{3x-2}=(4x+9)/\sqrt{3x-2}$$

Ans. _____

2. Exponents and Radicals ***December 1992***

1. Determine the value of A if $15^6 \cdot 30^6 \cdot 18^6 = A^{12}$

Ans. _____

2. If $\sqrt[5]{64} \cdot \sqrt[4]{32} \cdot \sqrt[3]{16} = 2^{\frac{A}{B}}$, where A and B are relatively prime, find $\dfrac{A}{B}$.

Ans. _____

3. Find all value(s) of x, so that $9^{x-1}-12 \cdot 3^{x-2}+3=0$.

Ans. _____

2. Exponents and Radicals ***December 1993***

1. Simplify: $\sqrt{8-\dfrac{7}{6-\dfrac{5}{4-\dfrac{3}{2}}}}$

Ans. _____

2. For what value of x does $54^{n-1}\cdot 10^{n+1}$ equal $15^{n+1}\cdot 6^{2n-1}\cdot x$

Ans. _____

3. Find all value(s) of w such that $9^w - 28\cdot 3^{w-1} = -3$

Ans. _____

2. Exponents and Radicals ***December 1994***

1. Solve for x: $\left(2^3\right)^2(2x)^3 = 2^2 + 2(2)$

Ans. _____

2. Find all value(s) of x which satisfy the equation: $x - 8\sqrt{x-1} + 14 = 0$

Ans. _____

3. If $5^n = 2025$, what does $5^{\frac{1}{2}n-1}$ equal?

Ans. _____

2. Exponents and Radicals ***December 1995***

1. Simplify: $\sqrt{5000}-\frac{7}{\sqrt{2}}-\sqrt{\frac{1}{8}}$

Ans. _____

2. Find all solutions for x for which $4\cdot 3^{x^2-x}-4^3>-4(7)$

Ans. _____

3. Solve for y, if $\frac{(y-2)^{-\frac{1}{2}}-(y-2)^{\frac{1}{2}}}{3-y}=\frac{1}{5}$

Ans. _____

2. Exponents and Radicals ***December 1996***

1. If $a^b a^c\left(a^2\right)^b\left(a^{3c}\right)^2=a^p$, find p in terms of a, b and c in simplest form.

Ans. _____

2. $a^3 2^b c^2=21{,}600$ where a, b and c are prime integers. Determine the value of $(a-b)^3(c-a)^3$

Ans. _____

3. Express in simplest form: $\sqrt[n]{\frac{54\cdot 5^{n+2}}{25\cdot 3^{2n+3}\cdot 2^{3n+1}}}$

Ans. _____

2. Exponents and Radicals ***December 1999***

1. Find x if $343^x = 7\sqrt{7}$

Ans. _____

2. Express $\dfrac{5^{\frac{7}{2}} + 5^3 + 5^{\frac{5}{2}} + 25}{1+\sqrt{5}}$ in simplest form.

Ans. _____

3. Arrange A, B, C, D, E in order smallest to largest if,
$A = \sqrt{\sqrt[3]{5 \cdot 6}}$, $B = \sqrt{6\sqrt[3]{5}}$, $C = \sqrt{5\sqrt[3]{6}}$, $D = \sqrt[3]{5\sqrt{6}}$, $E = \sqrt[3]{6\sqrt{5}}$

Ans. _____

3. Lines, Angles, and Polygons ***December 1988***

1. Three lines meet at a point forming six angles, three of which have measures of $(3x+6)^\circ$, $(7x-10)^\circ$, and $(9x-6)^\circ$. If none of these angles have equal measure, find the numerical ratio of the smallest measure to the largest measure. Express your ratio in lowest terms.

Ans. _____

2. In triangle ABC, $\overline{AB} \cong \overline{AC}$, $m\angle A = 40^\circ$, and point O is within the triangle so that $\angle OBC \cong \angle OCA$. Find $m\angle BOC$ in degrees.

Ans. _____

3. Given : $\overline{MN} \parallel \overline{PO}$

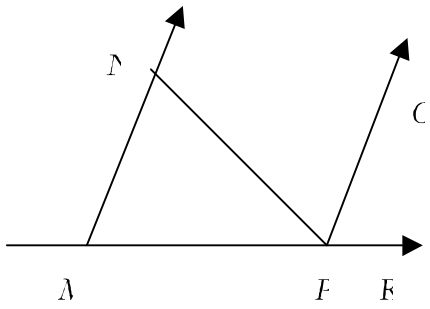
   $\overrightarrow{PO}$ bisects $\angle NOR$

   $MN = x + 5$

   $MP = \frac{4x}{5} + 12$

   $np = 2x - 12$

   Find the perimeter of ΔMNP.



Ans. _____

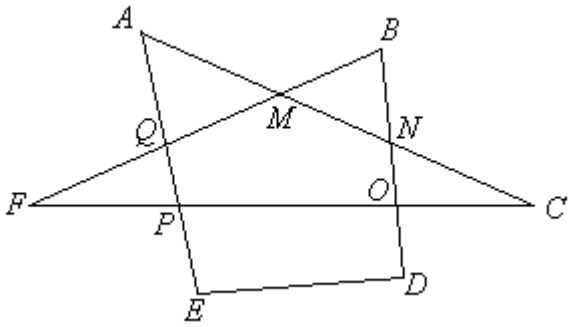
3. Lines, Angles, and Polygons ***February 1989***

1. Find the number of sides of a polygon given that each interior angle is 7 ½ times the exterior angle at the same vertex.

Ans. _____

2. Find $m\angle QAM + m\angle MBN + m\angle NCO + m\angle ODE + m\angle PED + m\angle PFQ$.

Ans. _____



3. A regular octagon *ABCDEFGH* has sides of 8. Two line segments are drawn from point *F*, one to point *A* and the other to point *C*. Find the number of square units in the area of the quadrilateral *ABCF*.

Ans. _____

3. Lines, Angles, and Polygons ***December 1989***

1. One side of a triangle is 6 cm longer than another side. A ray bisecting the angle formed by these two sides divides the third side of the triangle into segments of 5 cm and 8 cm. Find the perimeter of the triangle in centimeters.

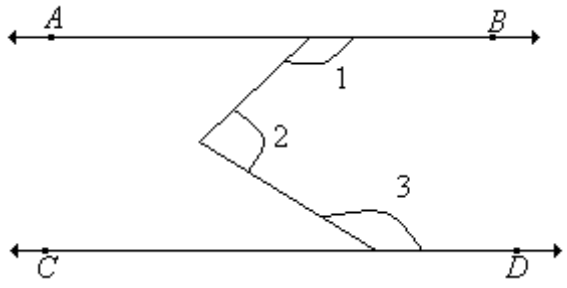
Ans. _____

2. A pentagon has a 90° angle and a 100° angle. The other three angles are in the ratio of 8 : 12 : 15. Find the measure of the other three angles.

Ans. _____

3. Given: $\overleftrightarrow{AB} // \overleftrightarrow{CD}$
   Find: $m\angle 1 + m\angle 2 + m\angle 3$

Ans. _____



3. Lines, Angles, and Polygons ***January 1990***

1. A regular hexagon is inscribed in a circle. Find the ratio of the length of a side of the hexagon to the length of the shorter arc intercepted by the side. State your answer in terms of π.

Ans. _____

2. Find the number of sides of the regular polygon inscribed in a circle if each vertex angle is three times as large as each central angle determined by a side of the polygon.

Ans. _____

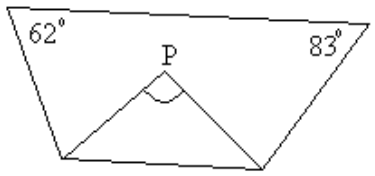
3. Given two equiangular polygons P_1 and P_2 with different number of sides: each angle of P_1 is x degrees and each angle of P_2 is kx degrees where k is an integer greater than 1. Find all the possible number of sides for P_1 and P_2.

Ans. _____

3. Lines, Angles, and Polygons ***December 1991***

1. Two consecutive angles of a quadrilateral are 62 and 83. Find the angle P made by the bisectors of the other two angles (Refer to figure below).

Ans. _____



2. The shorter diagonal of a rhombus is ¾ of the length of the other diagonal. If the perimeter of the rhombus is 60 cm., find the perimeter of the quadrilateral that joins the midpoints of the sides of the rhombus.

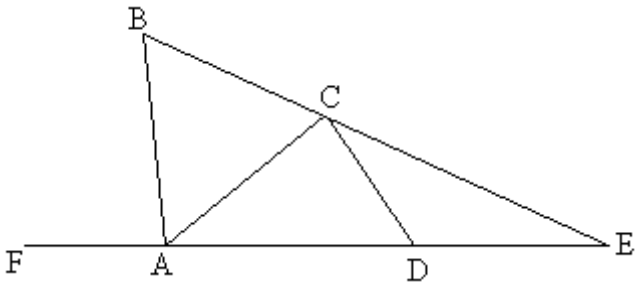
Ans. _____

3. $AB = AC = CD = DE$

   $m\angle E = \frac{1}{10} m\angle CDE$

   Find $m\angle BAF$

Ans. _____



3. Lines, Angles, and Polygons ***February 1992***

1. Find the length of the shortest diagonal of a regular hexagon with a perimeter of 110 ft. Express your answer to the nearest tenth of a foot.

Ans. _____

2. A regular octagon is formed by clipping the corners off a square that is 4 ft. by 4 ft. Find the exact perimeter of the octagon.

Ans. _____

3. If the number of sides of a regular polygon is increased by 4, the resulting regular polygon will have an interior angle that is 3 degrees more than the measure of an interior angle of the original polygon. How many sides does the original polygon have?

Ans. _____

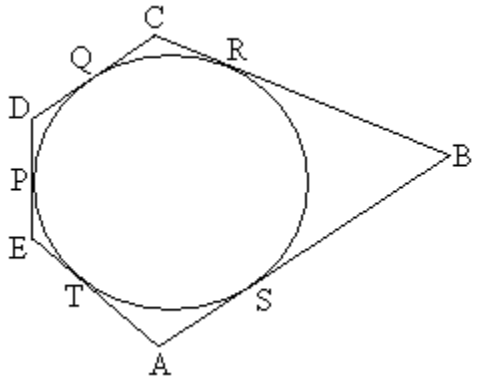
3. Lines, Angles, and Polygons ***February 1993***

1. Ted drew a large circle and labeled 39 distinct points on it. He then proceeded to connect pairs of these points in as many ways as he possibly could. He found that there were 39*N* ways. Find *N*.

Ans. _____

2. The pentagon is circumscribed about the circle shown. The diameter of the circle is 20. *P*, *Q*, *R*, *S*, and *T* are points of tangency. *AS* = 3, *BS* = 16, *CQ* = 6, *DQ* = 5, and *PE* = 4. Find the area of the pentagon.

Ans. _____



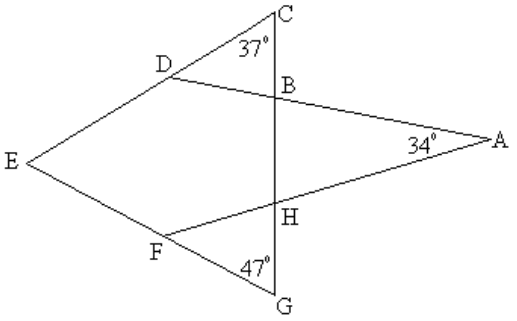
3. If the number of sides of a regular polygon is increased by three, the number of degrees in each angle is increased by 20. Find the number of degrees in each angle of the new polygon.

Ans. _____

3. Lines, Angles, and Polygons ***December 1992***

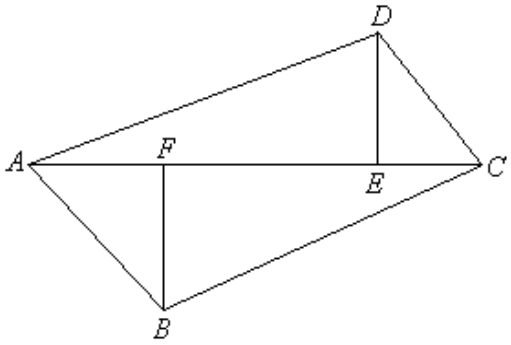
1. Given: $DE = EF$, $AD = AF$
   $m\angle C = 37°$, $m\angle A = 34°$, $m\angle G = 47°$
   Find: $m\angle ABH$

Ans. _____



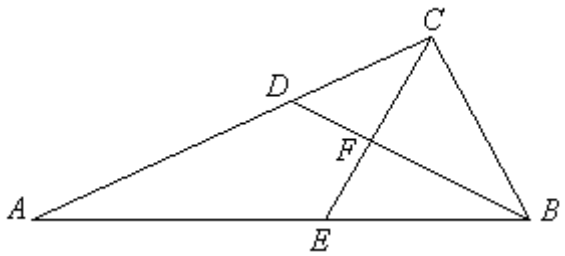
2. Given: quadrilateral $ABCD$ with right angles at A and C. $\overline{BF}$ and $\overline{DE}$ are $\perp$ to $\overline{AC}$.
   $AF = 3$, $BF = 5$, $FC = 7$.
   Find the length of $\overline{DE}$.

Ans. _____



3. Given: $BC = 15$, $CF = 10$, $FE = 6$, $AE = 26$, $BE = CD$
   BD bisects $\angle ABC$
   Find the length of $\overline{AD}$

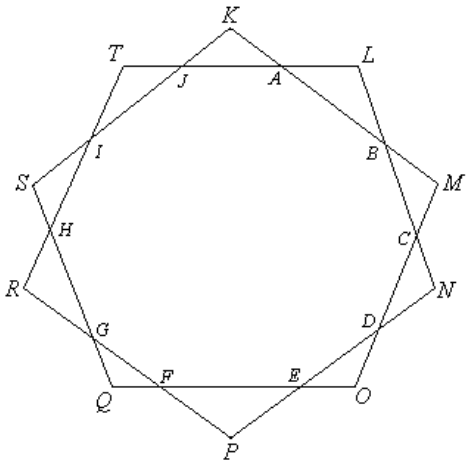
Ans. _____



3. Lines, Angles, and Polygons ***December 1993***

1. Let *ABCDEFGHIJ* be a regular decagon. Find the sum of the angles, alphabetically, *K* through *T*.

Ans. _____

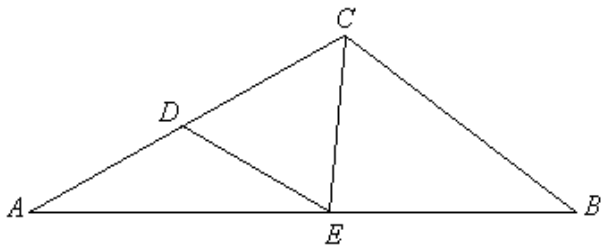


2. A regular convex polygon has 20 diagonals. If the length of longest diagonal is *x* units, find the length of the shortest diagonal in terms of *x*.

Ans. _____

3. Given: $CD = DE = AE$, $AC = AB$, $CE = CB$
   Find the measure of $\angle ECB$

Ans. _____



3. Lines, Angles, and Polygons ***December 1994***

1. A regular pentagon has all of its diagonals drawn. Find the number of degrees in the "point" of the star formed by the diagonals.

Ans. _____

2. Find the number of degrees in each angle of a regular polygon that has 54 diagonals.

Ans. _____

3. Triangle ABC is isosceles. $AB = AC = 10$ cm. $BC = 5$ cm. $\overline{BX}$ is the median and $\overline{BY}$ is the altitude to side $\overline{AC}$. Find the centimeter length of $\overline{XY}$ in simplest form.

Ans. _____

3. Lines, Angles, and Polygons ***December 1995***

1. Given quadrilateral $ABCD$ with $m\angle D = 130^\circ$ and $m\angle B = 72^\circ$. The bisector of angle A intersects the line through C parallel to segment AB at point F. If quadrilateral $ADCF$ is a trapezoid, find the measure of angle BCD.

Ans. _____

2. The sum of the exterior angles of polygon A is equal to the sum of the interior angles of a polygon with ten less sides. How many sides does the polygon A have?

Ans. _____

3. A regular hexagon has an area of 3 864 sq. cm. Three squares are attached to the exterior of a hexagon so that a side of each square is a side of the hexagon. Three equilateral triangles are attached in a similar fashion to the other three sides of the hexagon. Find the perimeter in centimeters of the concave polygon formed in this manner.

Ans. _____

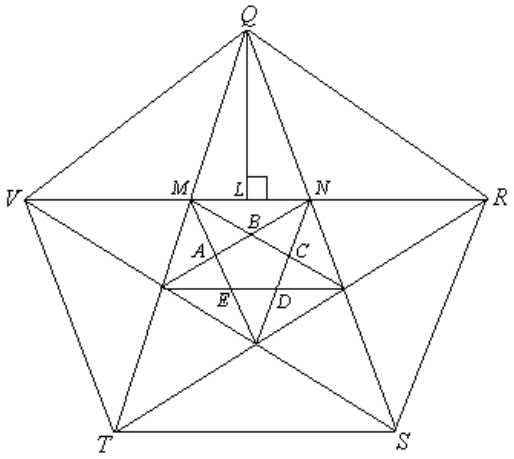
3. Lines, Angles, and Polygons ***December 1996***

1. What is the maximum number of segments that can be drawn to connect 6 different points?

Ans. _____

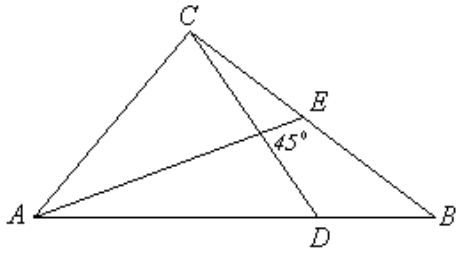
2. Given: Regular pentagon *QRSTV* and the rest of the figure as drawn. $TS = 20$, $\overline{QL}$ is the altitude to $\overline{MN}$.
   If $ML = p$ and the perimeter of pentagon *ABCDE* is x, find x in terms of p.

Ans. _____



3. In triangle *ABC*, $AC = CD = AE$ and $m\angle B = 45^\circ$. If m is the measure of angle *ACD*, and n is the measure of angle *CAE*, find the value of $m + n$.

Ans. _____



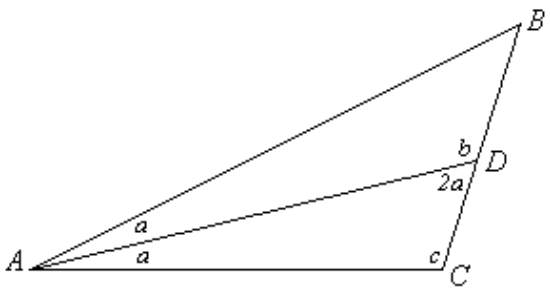
3. Lines, Angles, and Polygons ***December 1999***

1. X is the midpoint of hypotenuse AC in right triangle ABC. Y is the midpoint of side BC and $BX = AB$. Find $m\angle BXY$.

Ans. _____

2. Lizzie has determined the angle measures shown on the figure. Find the measure of c in degrees, if $\frac{b}{c} = \frac{10}{9}$.

Ans. _____



3. A regular hexagon with side length 4 is drawn with all nine diagonals. All intersection points between line segments in the drawing are labeled with letters. Find the shortest distance between two lettered points. Give exact answer.

Ans. _____

4. Complex Numbers ***December 1988***

1. Divide $6 + 3i$ by $2 + 4i$. Give your answer in $a + bi$ form.

Ans. _____

2. For what value(s) of k, $k \neq -i$, will $(k+i)^4$ be a real number?

Ans. _____

3. Find a polynomial $f(x)$ of degree five with real number coefficients that has zeros of 1, $5i$, and $1 - i$.

Ans. _____

4. Complex Numbers ***December 1989***

1. Find the reciprocal of $3 - 4i$. State your answer in $a + bi$ form with a and b as real numbers.

Ans. _____

2. Find all the roots of $9x^4 - 21x^3 - x^2 + 19x - 10 = 0$.

Ans. _____

3. Find the value of $\dfrac{i \cdot i^4 \cdot i^7 \cdot i^{10} \cdot i^{13} \cdot \ldots \cdot i^{58} \cdot i^{61} \cdot i^{64}}{i + i^4 + i^7 + i^{10} + i^{13} + \ldots + i^{58} + i^{61} + i^{64}}$ in $a + bi$ form.

Ans. _____

4. Complex Numbers ***December 1991***

1. Evaluate $x^3 - 2x - 4$, if $x = -1 + i$

Ans. _____

2. Simplify and express your answer in a + bi form: $\dfrac{i^{18} - 3i^{11}}{5i^{100} + i^{53}}$

Ans. _____

3. For what positive real value(s) of k will $(2 + ki)^3$ be a real number?

Ans. _____

4. Complex Numbers ***December 1992***

1. Find the complex conjugate of: $\dfrac{1}{4 + 3i}$ Express answer in simplest $a + bi$ form.

Ans. _____

2. Find all value(s) of x for which $2x^2 - ix + 1 = x^2 + 2ix + 3$.

Ans. _____

3. If $x = -\dfrac{1}{2} + \dfrac{\sqrt{3}}{2}i$ and $y = -\dfrac{1}{2} - \dfrac{\sqrt{3}}{2}i$ then what does $x^7 + y^7$ equal, in simplest $a + bi$ form?

Ans. _____

4. Complex Numbers ***December 1994***

1. If $z = 6$, $w = 4 - i$ and $v = 2 - i$, then find $v\,(z - w)$ in simplest form.

Ans. _____

2. Express $(3-3i)^{10}$ as a complex number in simplest $a + bi$ form, without exponents.

Ans. _____

3. Determine the square root(s) of $-5 + 12i$.

Ans. _____

4. Complex Numbers ***March 1994***

1. If $z_1 = 2 - 3i$ and $z_2 = -4 - i$, find $3z_1/2z_2$. Express your answer in $a + bi$ form.

Ans. _____

2. One of the roots of the equation $z^3 + 3z^2 - iz^2 - 3iz + 2z + 6 = 0$ is $-i$. What are the others?

Ans. _____

3. Find the 6 roots of the equation $z^6 = -i$.

Ans. _____

4. Complex Numbers ***December 1995***

1. Simplify: $\dfrac{2+3i}{i(4+i)}$ Express in simplest $a + bi$ form.

Ans. _____

2. Solve the following for x and express in simplest $a + bi$ form:
$2+3ix-(4+5i)=(4i-3)x-5i$

Ans. _____

3. $1 + 2i$ is a root of $7x^3 - 29x^2 + 65x - 75 = 0$. Find all other roots.

Ans. _____

4. Complex Numbers ***December 1996***

1. If $A = 3 + 5i$, $B = 7 - 2i$, $C = 8 + 4i$, then determine in $a + bi$ form the value of $A - BC$.

Ans. _____

2. Evaluate $\left(-1-\sqrt{3i}\right)^7$

Ans. _____

3. Find the two square roots of $5 + 12i$.

Ans. _____

4. Complex Numbers ***December 1998***

1. Solve for x, where x is a complex number in the form of $a + bi$ and a and b are real numbers, if $3x + 2i = (4 + 6i)i$

Ans. _____

2. Express the sum of the reciprocals of z_1 and z_2 in simplest $a + bi$ form, where a and b are real, if $z_1 = 2 + 3i$ and $z_2 = 3 - 2i$.

Ans. _____

3. If $x_1 = 6\left(\cos\frac{5\pi}{12} + i\sin\frac{5\pi}{12}\right)$ and $x_2 = 3\left(\cos\frac{\pi}{12} + i\sin\frac{\pi}{12}\right)$, find $\frac{x_1}{x_2}$ in $a + bi$ form, where a and b are real.

Ans. _____

4. Complex Numbers ***December 1999***

1. Find all solutions for x, in $a + bi$ form, if $x^2 - 2ix - 2x + 2i = 0$.

Ans. _____

2. There are only two numbers that meet the following specifications:
   z^3 is purely imaginary
   z^6 is real
   z is purely imaginary
   $|z| = 2$

   Find the product of these two numbers.

Ans. _____

3. Let r_1 and r_2 be two complex roots of a quadratic equation with integral coefficients. If $r_1 + r_2 = 4$ and $r_1 r_2 = 9$, find $\left|\frac{r_1}{r_2}\right|$

Ans. _____

5. Arithmetic w/ Percent ***December 1994***

1. A compact disc as purchased from a store which was having a 15% discount sale. The cost, including 6% sales tax was $8.65. What was the regular selling price? Express your answer in dollars and cents to the nearest cent.

Ans. _____

2. An elementary school had an enrollment of 180 students last year. They used 103 boxes of crayons. This year there are 207 students. The school wants to increase its per student use of boxes of crayons over last year's by 15%, because they ran short last year. How many boxes of crayons will the students need?

Ans. _____

3. A store changed its price on an item in the following pattern for a four week period: week 1, 10% markdown; week 2, 10% markdown; week 3, 15% markup; week 4, 25% markdown. The store buys an ad in the newspaper which reads: "Over the past four weeks we have reduced our price on this item by a total of *N*%." Find *N* to the nearest whole %.

Ans. _____

5. Arithmetic w/ Percent ***December 1995***

1. What minimum score should Cheryl get on her next exam so that her grade average will improve by 2 points? Her exam grades so far are 75, 86 and 82.

Ans. _____

2. How many books each containing 250 pages can a student read in 30 days, if she can read $1\frac{2}{3}$ pages per minute? She reads two-thirds of her leisure time and she has 2 hours of leisure time each day.

Ans. _____

3. A merchant paid $960 on a bill of goods on which he had been given successive discounts of 25%, 20% and 20%. What was the original bill?

Ans. _____

5. Arithmetic w/ Percent ***December 1996***

1. Find the sum of these two decimals as a fraction in lowest terms. $.0\overline{96} + .8\overline{53}$

Ans. _____

2. A used-car dealer reduced the price on one of his cats by 25%. He then took off $500, but the customer still did not buy it. He offered the next customer another 25% below this, it still remained on the lot. He finally dropped the now very low tag by 20% and sold the car to his nephew for $960. What was the original ticket price on the car?

Ans. _____

3. Find the only whole number from 0 to 1000 which, when divided by 7 gives a remainder of 2, when divided by 8 gives a remainder of 3, and when divided by 9 gives a remainder of 4.

Ans. _____

5. Arithmetic w/ Percent ***December 1998***

1. A CD sells for $24.95. The next week (week 2), the owner has a "20% off" sale. The week after (week 3), the owner returns all sales to their original prices. What % were the CDs marked up from week 2 to week 3?

Ans. _____

2. For the past three years, the inflation rate has been 4%, 3.17%, and 1.75%. For the past three years, income has increased at rates of 1.5%, 1.2% and 1.1%, respectively. If the inflation rate for this year is 1.2%, what income rate for this year would be necessary to match the rate of inflation for the past 4 years? Express answer to nearest 1000th of a percent.

Ans. _____

3. The product of the GCF and the LCM of x and y is 3456. The sum of the GCF and the LCM of x and y is 168. List all possible pairs of (x, y) that meet these criteria.

Ans. _____

5. Arithmetic w/ Percent ***December 1999***

1. Judy's average bowling score is exactly 115. If she bowls one more game and scores 125, her average will improve to exactly 117. Find her average if, instead of bowling one more game and getting the 125, she bowls two more games and scores 104 and 117. Give answer to nearest 10th.

Ans. _____

2. Erik is 20% older than Martin. Tony is 20% older than Erik. How old is Martin if Tony was 14 when Erik was 8?

Ans. _____

3. John Martin invested $8000, simple interest for a year, part at 6% and the remainder at 5%. The income from the 5% investment yielded $48 more than the 6% investment. How much more interest would he have received, if he had switched the investments with the percents?

Ans. _____