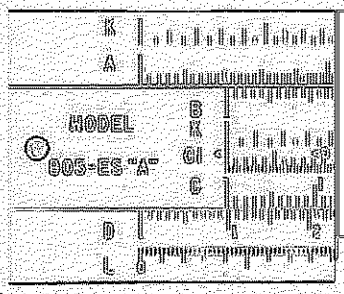

Texas Competitive Mathematics
Web - http://www.texasmath.org
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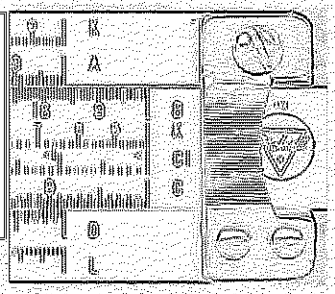
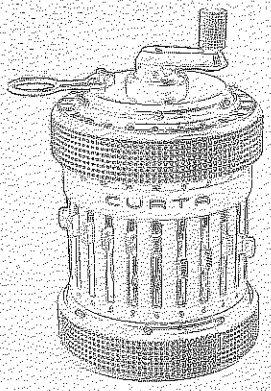
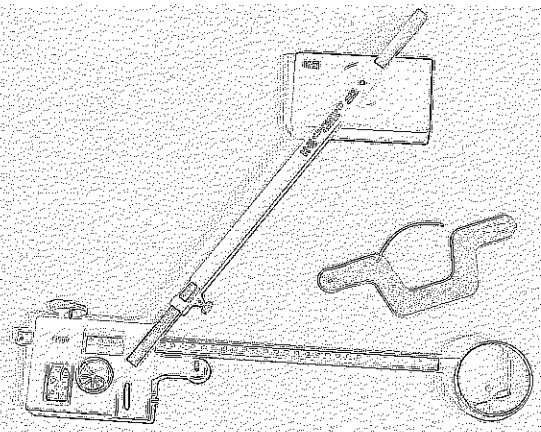
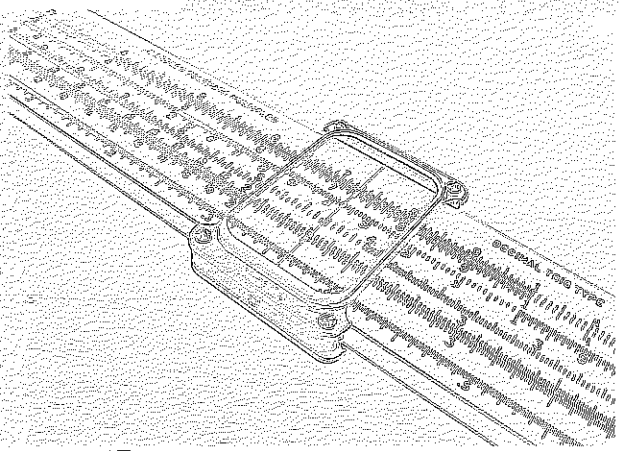
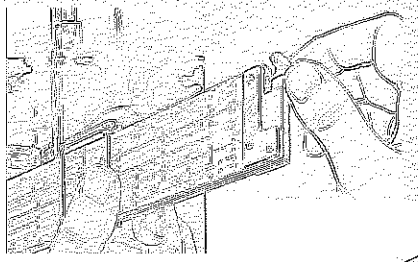


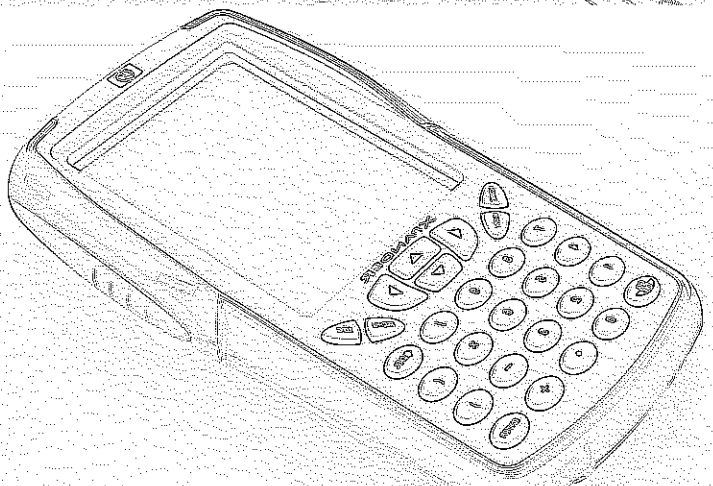
2006 UIL "C" EJH Mathematics Test
(8 pages)

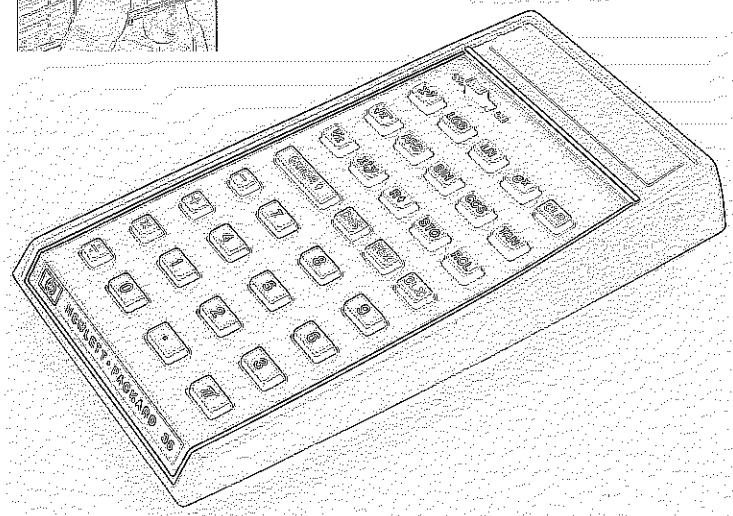


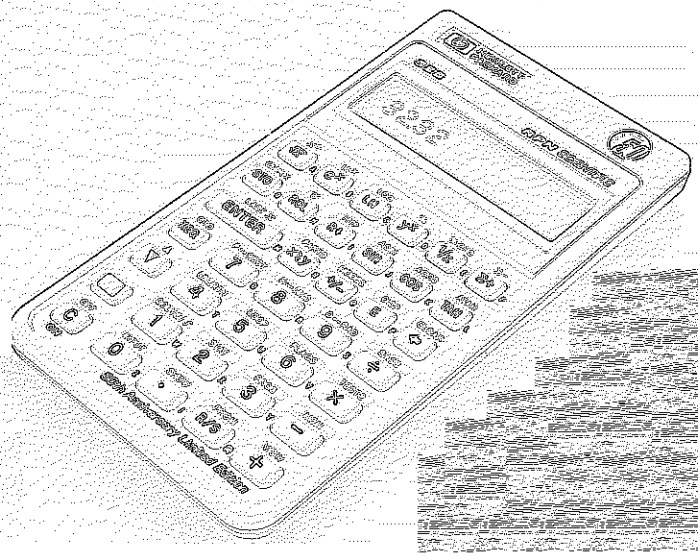


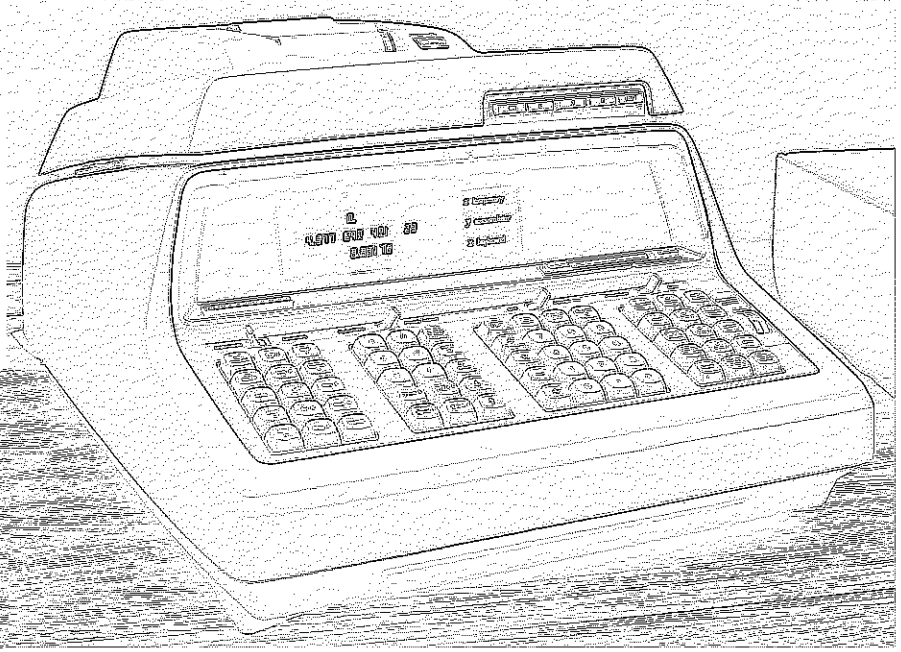










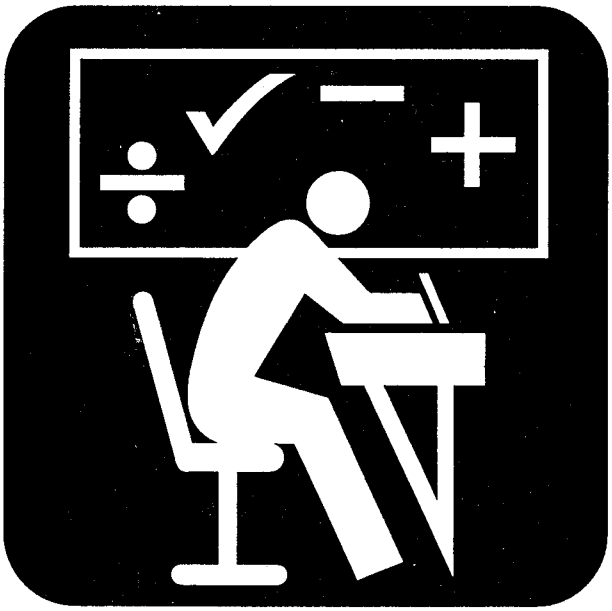


SPRING DISTRICT 2005-2006

ELEMENTARY/JUNIOR HIGH

University Interscholastic League

Making a World of Difference



Mathematics

DO NOT OPEN TEST
UNTIL TOLD TO DO SO

2005 – 2006 UIL MS/JH Mathematics Contest C

(1) What is the next number in the sequence 2, 9, 28, 65, . . .
A) 75 B) 80 C) 217 D) 125 E) 196

(2) If one gallon equals 128 ounces, then 192 ounces = _____ gallons.
A) 1 ½ B) 1 ¼ C) 1 3/8 D) 1 ¾ E) 1 3/5

(3) How many months are in nine and five-sixths years?
A) 100 B) 108 C) 118 D) 116 E) 108 5/6

(4) Phyllis jogs 1 1/3 miles every other day of the week. At this rate how far does she jog in June?
A) 24 miles B) 18 2/3 miles C) 21 2/3 miles D) 21 1/3 miles E) 20 miles

(5) How many edges are there in a square pyramid?
A) 4 B) 12 C) 16 D) 8 E) 20

(6) What is the median of the number of minutes played by Manuel in the table to the right?
A) 23
B) 12
C) 25
D) 24
E) 125

Game	Minutes Played
#1	21
#2	30
#3	24
#4	19
#5	31

(7) $0.1 + 0.3 + 0.5 + 0.7 + \ldots + 1.9 =$
A) 3 B) 10 C) 8.1 D) 3.61 E) 9

(8) $(-94) \times (-97) =$
A) –9,118 B) 10,718 C) 9,108 D) 9,118 E) –91,108

(9) Which of the following is not a prime number?
A) 323 B) 149 C) 271 D) 307 E) 2

(10) 24% of 16 is equal to 32% of ____
A) 14 B) 21 1/3 C) 24 D) 18 E) 12

(11) Which of the following is evenly divided with no remainder (divisible) by eleven?
A) 3,001 B) 6, 358 C) 1,055 D) 4,912 E) 6,233

(12) If the odds of it raining today are 2 to 5, what is the probability that it will not rain today?
A) 2 to 7 B) 3 to 5 C) 3 to 10 D) 3 to 7 E) 1 to 2

(13) Janie marked off a triangle with the following sides: 8', 15' and 17'. What is the area of this triangle?
A) 255 ft^2 B) 30 ft^2 C) 156 ft^2 D) 127 ½ ft^2 E) None of these

(14) The side of an equilateral triangle is 8 cm. Its area is $a\sqrt{b}$. What is a?
A) 32 B) 16/3 C) 64/3 D) 32/3 E) 16

For Problems 15 – 20 use the table below.

Classroom	Number of Students	Weight (Lbs.) $50 < W \leq 120$	Weight (Lbs.) $120 < W \leq 200$	Weight (Lbs.) $W > 200$
Mr. Zapata	26	10	12	4
Mrs. Feemster	25	9	15	1
Mr. Randles	23	11	9	3
Mrs. Cotton	24	8	12	4
Mr. Arguillo	27	12	7	8

(15) What is the mean number of students that weigh between 50 and 120 pounds?
A) 10 B) 50 C) 3 D) 40 E) 100

(16) What is the range of students that weigh more than 200 pounds?
A) 12 B) 7 C) 24 D) 4 E) 5.2

(17) What is the mode of the number of students that weigh between 120 and 200 pounds?
A) 30 B) 10 C) 14 D) 12 E) 6

(18) If weighing over 200 pounds is considered overweight, what percentage of the total number of students are the students that are considered overweight?
A) 8% B) 16% C) 20% D) 25% E) 4%

(19) What is the ratio of overweight students to those not considered overweight?
A) 5 to 4 B) 21 to 5 C) 21 to 4 D) 4 to 21 E) 4 to 5

(20) Which classroom had the highest percentage of students that are overweight?
A) Mr. Randles B) Mr. Zapata C) Mrs. Cotton D) Mrs. Feemster E) Mr. Arguillo

(21) If set $A = \{2, 4, 6, \ldots, 10\}$, set $B = \{1, 3, 5, 7, \ldots, 21\}$ and set $C = \{1, 1, 2, 3, 5, \ldots\}$ then $A \cup B \cap C =$
A) $\{1, 2, 3, \ldots, 21\}$
B) $\{2, 4, 6, \ldots, 20\}$
C) ϕ
D) $\{1, 2, 3, 5, 8, 13, 21\}$
E) $\{1, 1, 2, 3, 4, \ldots, 21\}$

(22) $4\frac{1}{8} \times 4\frac{1}{8} =$
A) $17\frac{1}{64}$ B) $16\frac{1}{8}$ C) $17\frac{1}{32}$ D) $17\frac{1}{8}$ E) $16\frac{1}{16}$

(23) What is the smallest palindrome greater than 500?
A) 599 B) 525 C) 505 D) 606 E) 494

(24) How many prime numbers lie between 0 and 20?
A) 8 B) 7 C) 10 D) 9 E) 12

(25) If Andy has a 41 foot long rope attached to the top of a 40 foot building, how far from the base of the building can he pull the rope taut and still touch the level ground with the end of the rope?

A) 1 ft B) 10 ft C) $10\sqrt{2}$ ft D) $7\sqrt{3}$ ft E) 9 ft

(26) If one of the angles of a rhombus is 106° then one of the adjacent angles is

A) 252° B) 37° C) 74° D) 126° E) 148°

(27) Matt works at a toy store where his hourly wage is \$2.25/hr plus \$4.50 for every toy bike he assembles. If Matt earns \$54.00 for an eight-hour day, how many bikes did he assemble?

A) 6 B) 12 C) 10 D) 9 E) None of These

8

(28) What is the area of a trapezoid with bases 12", 18" and altitude 10"?

A) 300 in^2 B) 15 in^2 C) 150 in^2 D) 120 in^2 E) 3,000 in^2

(29) Albert likes to ride his bicycle on weekend trips that last no more than 200 miles. If Albert is to follow a triangular route between three cities that starts in Houston and returns back to Houston, which of the following routes would he NOT take, using the table to the right?

A) Houston to Port Arthur to Galveston to Houston
B) Houston to Wharton to Galveston to Houston
C) Houston to Conroe to Brenham to Houston
D) Houston to Wharton to Brenham to Houston
E) Houston to Beaumont to Conroe to Houston

City #1	City #2	Miles
Houston	Port Arthur	38
Houston	Beaumont	21
Houston	Galveston	51
Houston	Wharton	57
Houston	Brenham	73
Houston	Conroe	41
Beaumont	Conroe	90
Brenham	Wharton	67
Galveston	Wharton	93
Brenham	Conroe	67
Port Arthur	Galveston	109

(30) Place the following in descending order: $\{-1.01, -1.10, 0, \pi, \sqrt{8}\}$?

A) $\{\pi, \sqrt{8}, -1.01, -1.10, 0\}$
B) $\{\pi, \sqrt{8}, -1.01, 0, -1.10\}$
C) $\{-1.10, -1.01, \pi, 0, \sqrt{8}\}$
D) $\{-1.01, -1.10, 0, \pi, \sqrt{8}\}$
E) $\{\pi, \sqrt{8}, 0, -1.01, -1.10\}$

(31) If $f(x) = x^2 - 6x + 9$, then $f(4) =$

A) 144 B) 9 C) 17 D) −1 E) 1

(32) Where does the line defined by the equation, $2x + 5y = 8$, cross the y-axis?

A) $(\frac{5}{8}, 0)$ B) $(-\frac{8}{5}, 0)$ C) $(0, \frac{1}{4})$ D) −8 E) $(0, \frac{8}{5})$

(33) If the sides of an isosceles triangle are 10", 10" and 16", then its area is

A) 24 in^2 B) 48 in^2 C) 96 in^2 D) 80 in^2 E) None of these

(34) Where on the Cartesian coordinate plane is the point (−8, 0) located?

A) 4th quadrant B) 3rd quadrant C) x-axis D) y-axis E) 2nd quadrant

(35) If I draw a single card from a standard deck of 52 cards (no jokers), what are the odds that I will draw a king?
A) 1 to 26 B) 1 to 13 C) 13 to 4 D) 26 to 3 E) 1 to 12

(36) Marylou throws three dice. How many possible outcomes area available to her?
A) 9 B) 12 C) 18 D) 216 E) 36

(37) Paris, France lays one time zone earlier than London, England. El Paso, Texas is seven time zones later than London, England. If it is 3:00 p.m. in Paris, what time is it in El Paso?
A) 7:00 a.m. B) 10:00 p.m. C) 11:00 p.m. D) 6:00 a.m. E) 8:00 a.m.

(38) The $\sqrt{800}$ lies between which of the following?
A) 28 & 29 B) 40 & 41 C) 400 & 401 D) 41 ½ & 42 ½ E) None of these

(39) Genny takes a paper plate with a diameter of 10" and cuts a hole with a diameter of 4" out of it. What is the area remaining of one side of the paper plate?
A) π in^2 B) 2π in^2 C) 3π in^2 D) 9π in^2 E) 40π in^2

(40) Guadalupe has two identical cubes. She writes consecutive odd numbers, beginning with 1, on each face of one cube and consecutive even numbers, beginning with 2, on each of the faces of the other cube. If Guadalupe rolls the two cubes, what is the probability that the sum of the faces showing will be 11?
A) $\frac{5}{18}$ B) $\frac{11}{18}$ C) $\frac{5}{6}$ D) $\frac{1}{4}$ E) $\frac{1}{3}$

(41) Andy has six different slacks, eight different shirts and two different pairs of shoes. How many different combinations of these clothes and shoes can he wear?
A) 48 B) 84 C) 96 D) 432 E) 768

(42) $2\frac{7}{64} \div 1\frac{7}{8} =$
A) $2\frac{1}{16}$ B) $1\frac{1}{8}$ C) $2\frac{1}{8}$ D) $2\frac{7}{64}$ E) $1\frac{7}{64}$

(43) The equation $x^2 + 5x - 36 = 0$ has two solutions. The larger ratio of those two solutions is:
A) $\frac{9}{4}$ B) $-\frac{9}{4}$ C) $-\frac{4}{9}$ D) $\frac{4}{9}$ E) None of these

(44) The nth triangular number is the sum of the consecutive integers, beginning with one, up to the nth integer. With this in mind, what is the seventh triangular number?
A) 56 B) 42 C) 24 D) 28 E) 112

(45) Which of the following sequences follows the rule: $\frac{n(n-1)}{2}$?

A) 0, 1, 3, 6, 10, 15
B) 0, 1, 2, 3, 4, 5, 6
C) −1, 0, 1, 3, 5, 6
D) 1, 2, 4, 6, 8, 15
E) −1, 0, 1, 3, 6, 10

(46) 42 (base 6) – 13 (base 6) = _____ base 6.

A) 52 B) 29 C) 25 D) 100 E) 34

(47) Andy walks at the rate of 2½ mile per hour and Genny walks at the rate of 1¼ mile per hour. If they start at the same point and at the same time, walk in opposite directions around a circular track that is 1½ miles in circumference, how long will it take them to meet each other?

A) 40 min. B) 24 min. C) 30 min. D) 18 min. E) None of these

(48) What is the sum of the positive integral divisors of 24?

A) 160 B) 300 C) 24 D) 120 E) 60

(49) (MMXXV) ÷ (XLV) = _____ (Arabic numeral).

A) 225 B) $36\frac{9}{11}$ C) $40\frac{5}{11}$ D) 45 E) $49\frac{4}{9}$

(50) If $2x + y = 4$ and $x - y = 5$, then $\frac{x}{y} =$

A) $\frac{2}{3}$ B) 1 C) $\frac{1}{2}$ D) −2 E) $-\frac{3}{2}$

2005 – 2006 UIL MS/JH Mathematics Contest C – Answer Key

(1) D

(2) A

(3) C

(4) E

(5) D

(6) D

(7) B

(8) D

(9) A

(10) E

(11) B

(12) D

(13) E (60)

(14) E

(15) A

(16) B

(17) D

(18) B

(19) D

(20) E

(21) D

(22) A

(23) C

(24) A

(25) E

(26) C

(27) E (8)

(28) C

(29) B

(30) E

(31) E

(32) E

(33) B

(34) C

(35) E

(36) D

(37) A

(38) A

(39) D

(40) A

(41) C

(42) B

(43) C

(44) D

(45) A

(46) C

(47) B

(48) E

(49) D

(50) E