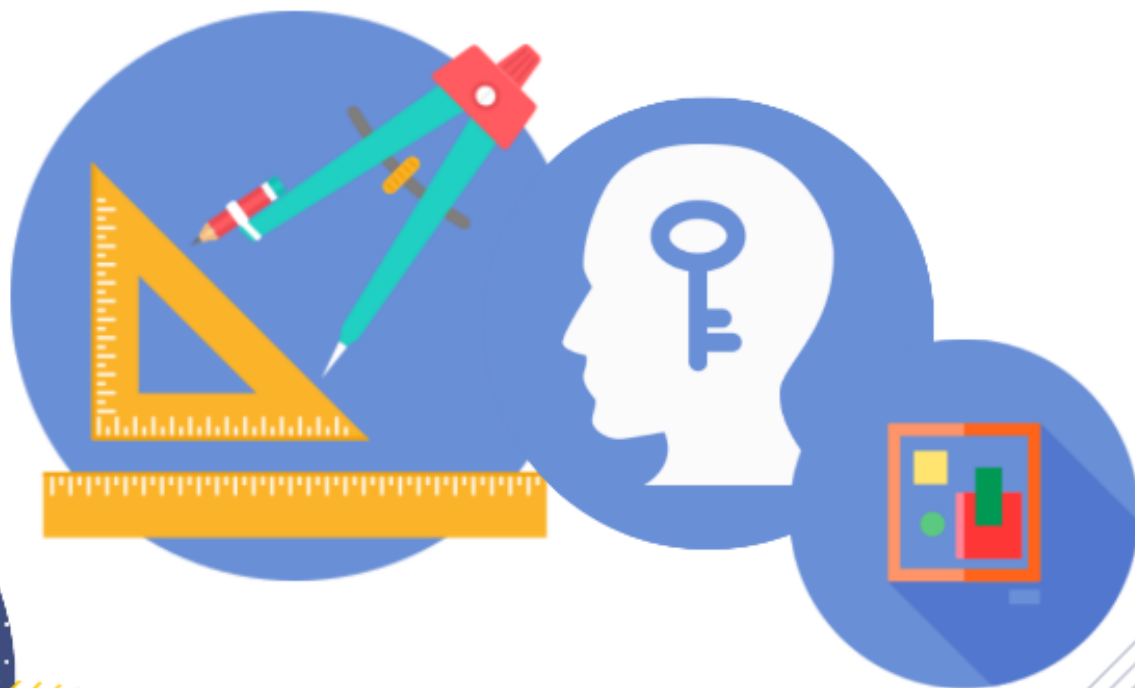


Kudos Test Prep

COLLEGE/SENIOR HIGH ENTRANCE TEST REVIEWER

MATH, LOGIC, & ABSTRACT REASONING



Name

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NUMERICAL and ANALYTICAL ABILITY

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What to Expect in the Mathematics Test

Nearly all entrance exams will have a section that tests your numerical ability. Exams such as the UPCAT and USTET cover general math topics whereas the DCAT and ACET are expected to include advanced topics in statistics, functions and probability.

Word problems are also common in the math section of the exams. The ACET in particular, has a separate word problems section that is part of their General Intelligence Test.

Logic tests may come in the form of puzzles, non-verbal/abstract reasoning, and evaluating arguments and conclusions. They appear in the General Intelligence Test of the ACET. The USTET also has logic items under the Mental Ability Test.

Some Useful Tips

The following strategies can help you score high in the UPCAT Mathematics Test:

- Keep track of the time. Before answering the questions, take note of the number of items and the time allotted for the exam. Estimate the average time you should allot for each item.
- Scan the items. Go over the test booklet quickly to get an idea of the types of questions or problems in the test (e.g. word problems, analysis of graphs and tables, simple arithmetic). This will help you determine the appropriate pace to take in answering the test.
- Pace yourself. Work quickly on topics you have mastered well, but without being rash or careless. When you encounter a difficult question, skip it and move on to the less difficult ones. When you have finished with all the easy questions, go back to the skipped items.
- Keep your pen moving. On the second reading of the item, create a "picture" of the problem and draw that picture on the scratch paper you are provided with. Take down the necessary facts (numbers, units, and dimensions), especially what is asked for in the problem. Many items may seem difficult on first reading become easier to handle after the facts have been taken down.
- Visualize! Draw diagrams. These help in the word problems. Familiarize yourself with the types of diagrams provided in every topic as these may prove useful in solving problems.

Percent
10 items/ 15 minutes

DIRECTIONS: This is a test to see how well and fast you can work with percent. Select your answer from the given choices.

1. What is 6 % of 200?
a. 3 b. 8 c. 12 d. 16 e. 24
2. 30 is 25 % of what number?
a. 1.5 b. 7.5 c. 60 d. 90 e. 120
3. What is 75% of 4, 804?
a. 1, 201 b. 2, 402 c. 3, 603 d. 6, 405 e. 9, 608
4. $\frac{3}{4}$ is what percent of $\frac{1}{2}$?
a. 130% b. 150% c. 50% d. 10% e. 90%
5. Twenty percent of 25% of 20 is:
a. $\frac{1}{4}$ b. 1 c. 4 d. 5 e. 7
6. During the opening of ABC Computer shop, the laptop was sold at P 21, 988. After 6 months, the price increased to P 31, 598. How much was the price increase in percentage form?
a. 24% b. 30% c. 44% d. 54% e. 70%
7. In a company, 28% of its employees receive a salary below the minimum wage. If there are 572 employees who receive higher than them, how many employees are there in the company?
a. 222 b. 549 c. 794 d. 945 e. 1016
8. Every peak season, the price of one ferry ticket is P 2, 375. But after 3 months, the price will return to its original price. If the original price of the ticket is 8% less than the price during the peak season, how much is the original price then?
a. P 2, 137.50 b. P 2, 185 c. P 2, 565 d. P 3, 000 e. P 3, 185
9. If an investment increases from P800 to P1,100, what is the percentage increase?
a. 37.5% b. 39% c. 40.5% d. 42% e. 43.5%
10. A car was bought for P8,000 and sold for P6,000, what was the percentage loss?
a. 10% b. 15% c. 20% d. 25% e. 30%

STOP HERE, WAIT FOR FURTHER INSTRUCTION

Answer Key for Math 1

**Arithmetic
(page 30-31)**

1. B. $2^2 \cdot 3^2 \cdot 7 \cdot 5$
2. D. 10,000
3. A. 1,234,567,890
4. B. 16
5. E. 160
6. C. 34
7. C. 24.00php
8. E. 31
9. C. P 1,192
10. D. 1 hr & 27 min

**Fractions
(page 32-33)**

1. A. 4
2. B. $\frac{54}{99}$
3. C. $\frac{13}{36}$
4. A. 63
5. A. $12\frac{3}{5}$
6. B. 24,000
7. D. 2,250
8. E. 150
9. C. P100
10. B. P 4,480

**Decimals
(page 34)**

1. A. .69
2. E. 354, 000
3. C. 0.523
4. B. 8.75×10^{-4}
5. D. 0.337
6. $\frac{3}{8}$, 37.5%
7. .2, 20%
8. $\frac{2}{25}$, 0.08
9. $\frac{103}{250}$, 0.412
10. 1.6, 160%

**Percent
(page 35)**

1. C. 12
2. E. 120
3. C. 3, 603
4. D. 10%
5. B. 1
6. C. 44%
7. C. 794
8. B. P 2, 185
9. A. 37.5%
10. D. 25%

**Addendum
Ratio and Proportion
(page 36)**

1. C. 40
2. A. 48
3. C. 20
4. B. 28
5. C. 33
6. D. 1.2 M

Math 1 Exit Test (page 37-39)

1. C. 5.8
2. A. 9.6
3. C. 1×10^{-9}
4. B. -7
5. B. 2.8
6. C. 4.2×10^2
7. C. 7 and 8
8. B. 4
9. C. $\frac{35}{24}$
10. A. $2^3 5^3$
11. D. all of these
12. D. 7/10
13. C. $\frac{1}{2}$
14. C. 20
15. C. 5 : 4
16. A. 95
17. $\frac{1}{80}$
18. C. 32^{11}
19. C. $4 + (5 + 6) = 4 + (6 + 5)$
20. D. 18

Numbers and Operations

Calculation Skills 1.A

3 sets/ 15 minutes

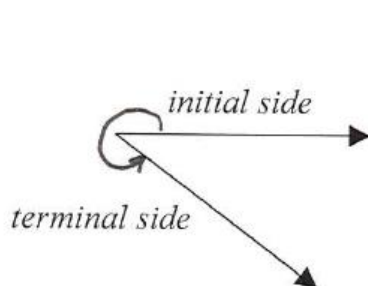
Do the series of indicated operations as illustrated in the first five items in Set A.

	A		B		C
1. 36	<u>36</u>	1. 25	—	1. 225	—
2. $\frac{1}{3}$ of this	$\frac{1}{3} \times 36$ <u>12</u>	2. $\frac{1}{5}$ of this	—	2. subtract 39	—
3. n^2	12^2 <u>144</u>	3. add 35	—	3. $\div 6$	—
4. $\times 6$	144×6 <u>864</u>	4. $\times 3$	—	4. $\times 13$	—
5. $\div 8$	$864 \div 8$ <u>108</u>	5. $+ 5$	—	5. add 222	—
6. $\times 3$	—	6. $\sqrt[3]{n}$	—	6. \sqrt{n}	—
7. \sqrt{n}	—	7. $+ 120$	—	7. $+ 140$	—
8. add 31	—	8. $\div \frac{5}{6}$	—	8. $\div 15$	—
9. $\div 7$	—	9. $\times 1.5$	—	9. $+ 121$	—
10. add 93	—	10. add 25	—	10. 150 % of this	—
11. 60% of this	—	11. 250% of this	—	11. $\div 9$	—
12. subtract 33	—	12. $\div 25$	—	12. add 979	—
13. $\sqrt[3]{n}$	—	13. \sqrt{n}	—	13. $\div 11$	—
14. add 7	—	14. add 24 times this	—	14. 200% of this	—
15. $\times 10$	—	15. $\frac{1}{25}$ of this	—	15. add 18	—
Answer:	—	Answer:	—	Answer:	—

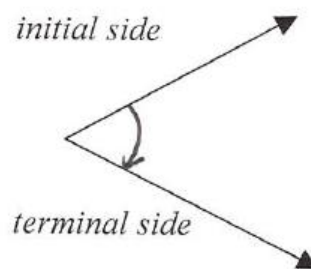
The Basics of Trigonometry

I. Definitions

- A. An angle is formed by rotating a ray around its endpoint or vertex. The initial position of the ray is the initial side of the angle, while the location of the ray at the end of its rotation is the terminal side of the angle. If the rotation of an angle is counterclockwise, the angle is positive; if the rotation is clockwise, the angle is negative.

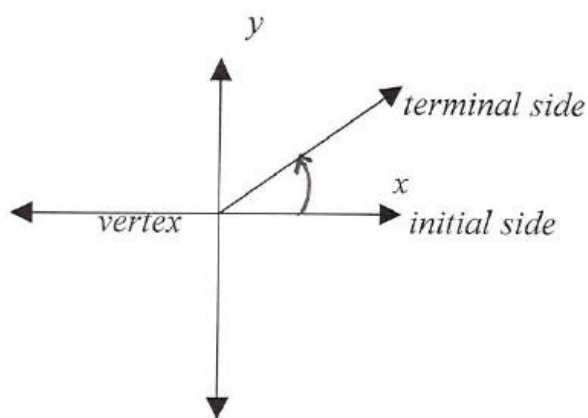


Positive angle

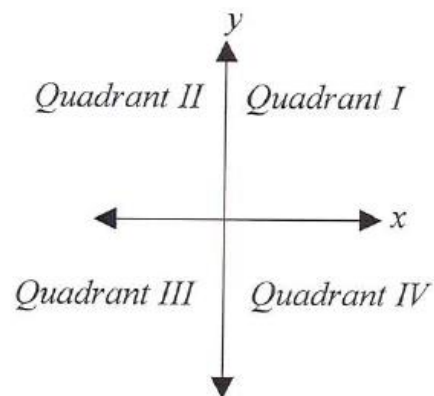


Negative angle

- B. An angle is in standard position if its vertex is at the origin of a rectangular coordinate system and its initial side is along the positive x -axis. An angle in standard position is said to lie in the quadrant where its terminal side lies.



Angle in standard position



- C. An angle in standard position whose terminal side coincides with the x -axis or y -axis is called a quadrantal angle. Two angles with the same initial side and the same terminal side, but different amounts of rotation, are called coterminal angles.

STATISTICS & PROBABILITY

Post - Test

(15 Items –25 Minutes)

DIRECTION: Choose the letter of the best answer.

- In how many ways can you arrange six different books in a bookshelf?
A. 720 B. 360 C. 180 D. 120
- Two dice are rolled in succession and the first die shows a two. Knowing this, find the probability that the sum shown by the dice is five, six, or seven.
A. $\frac{1}{2}$ B. $\frac{1}{13}$ C. $\frac{2}{13}$ D. $\frac{3}{13}$
- How many four-letter permutations can be formed from the letters in the word "heptagon"?
A. 3,360 B. 1,680 C. 840 D. 420
- There are 100 Ping-Pong balls in a drop box numbered 1 to 100. If a ball is randomly picked from a drop box, what is the probability of getting a ball divisible by 6?
A. 0.01 B. 0.06 C. 0.0625 D. 0.16
- How many ways can you sit 10 people in a round table with 10 seats?
A. 3,628,800 C. 725,760
B. 907,200 D. 362,880
- A box contains 3 yellow and 4 blue socks. One randomly draws a sock from the box (without replacement) until a blue sock is obtained. What is the probability that the three socks were selected?
A. $\frac{1}{4}$ B. $\frac{1}{3}$ C. $\frac{1}{35}$ D. $\frac{4}{35}$
- There are seven members in a group. Three of them are to be appointed as president, vice president, and secretary. Suppose the first person to be chosen is the president; the second person is the vice president; and the third person is the secretary. How many ways can one choose the president, the vice president, and the secretary from the group?
A. 35 B. 42 C. 120 D. 210
- Mel and Daniel play a game which involves tossing a fair coin. The coin is flipped repeatedly until one person wins. Daniel wins if the sequence TTT (tails-tails-tails) shows up, while Mel wins if the sequence HTT (heads-tails-tails) shows up. Who has a greater chance of winning?
A. Mel C. They have equal chances of winning
B. Daniel D. Cannot be determined

Annex C.

PART II. Common Word Problems

Definitions

- R-epresentation
- E-quation
- S-olution
- I-nterpretation
- Consecutive nos. (1,2,3,4...) intervals of 1
- Consecutive nos. (2,4,6...), (1,3,5...) intervals of 2

1. APPLICATIONS OF RATIO & PROPORTION

1.1 Ratios - Part to Part, no whole

The ratio of apples to oranges is 3 to 2. There are 15 apples. How many oranges?

$$\begin{array}{c}
 \text{Keep apples on top} \\
 \downarrow \quad \downarrow \\
 \frac{3}{2} = \frac{15}{X} \quad \text{NOT} \quad \frac{X}{15} \\
 \uparrow \quad \uparrow \\
 \text{keep oranges on bottom}
 \end{array}$$

Cross-multiply to solve for X
If the answer is not obvious. X = 10

You can put all apples on top or all apples on bottom, but don't mix in one equation.

1.2 Sharing a quantity in a given ratio

The ratio of apples to oranges is 3 to 2. There is a total of 50 apples and oranges. How many oranges?

Add up the total parts: 3 + 2 = 5 parts
Work out what one part is worth: 5 parts = 50
so 1 part = 50/5 = 10
Work out what parts are worth: Oranges has 3 parts, so
3 x 10 = 30 oranges

On multiple-choice problems work backward from answers. Only one answer works.

1.3 Multiple Ratios

The ratio of apples to oranges is 3 to 2.
The ratio of oranges to pears is 3 to 4.
What is the ratio of apples to pears? It's NOT 3 to 4.
Do one ratio at a time:

Assume 18 apples. Any number works, but pick a multiple of 3 that will divide evenly to avoid fractions.

$$\begin{array}{c}
 \text{keep apples on top} \\
 \downarrow \quad \downarrow \\
 \frac{3}{2} = \frac{18}{X} \quad , \text{ Solve for } X = 12 \\
 \uparrow \quad \uparrow \\
 \text{keep oranges on bottom}
 \end{array}$$

With 18 apples there are 12 oranges.

$$\begin{array}{c}
 \text{Now oranges on top} \\
 \downarrow \quad \downarrow \\
 \frac{3}{4} = \frac{12}{Y} \quad \text{Solve for } Y = 16 \\
 \uparrow \quad \uparrow \\
 \text{keep pears on bottom.}
 \end{array}$$

With 18 apples, there are 16 pears
or 18/16 or 9/8.

1.4 Increasing/Decreasing in a given ratio

It took 8 people 6 days to build a house. At the same rate, how long would it take 3 people?

Time for 8 people = 6 days
Time for 1 person = 8 x 6 = 48 days. It takes one person longer to build a house.
Time for 3 people = 48/3 = 16 days
3 people will take 1/3 of the time taken by 1 person.

2. Consecutive Numbers

Sample Problems:

1. The sum of three consecutive numbers is 84. Find the middle digit.

Solution

R: x be the lowest number, x+1 middle number, x+2 highest number.

$$E: x+(x+1)+(x+2)=84$$

$$\begin{aligned}
 S: 3x+3 &= 84 \\
 3x+3-3 &= 84-3 \\
 3x &= 81 \\
 (3x)/3 &= 81/3 \\
 x &= 27
 \end{aligned}$$

I: x=27, lowest number
x+1=28, middle number

10. Who works as the broker?

- a. A
- b. C
- c. D
- d. F

Questions 11-12

A foreigner read the writings SERA MERA CARA DARA on one of the famous establishments in the city. He learned from a restaurant that CARA SERA means COLD WATER. He also learned from a linguistics class that CARA DARA means WATER DELIVERY. He learned from the market that MERA DARA means SPRING DELIVERY.

11. Which of the following is the meaning of MERA?

- a. COLD
- b. WATER
- c. DELIVERY
- d. SPRING

12. In the language of the city, how would one say, "Cold Spring?"

- A. CARA MERA
- B. SERA MERA
- C. DARA CARA
- D. DARA SERA

13. There are five books A, B, C, D, E placed on a table. If A is placed below E, C is placed above D, B is placed below A and D is placed above E, then which of the following books touches the surface of the table?

- a. A
- b. B
- c. C
- d. D

14. Three ladies X, Y and Z marry three men A, B and C. X is married to A, Y is not married to an engineer, Z is not married to a doctor, C is not a doctor and A is a lawyer. Then which of the following statements is correct?

- a. Y is married to C who is an engineer
- b. Z is married to C who is a doctor
- c. X is married to a doctor
- d. None of these

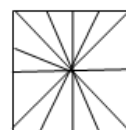
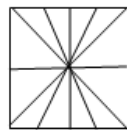
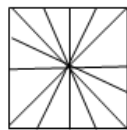
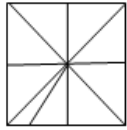
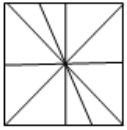
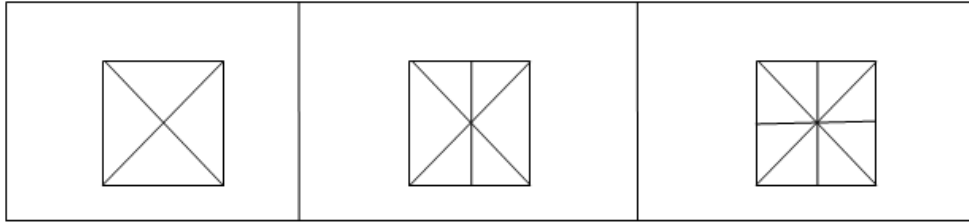
15. Someone spilt the milk. Four girls, Jenny, Mandy, Nelly and Sandy, were questioned by their mother.

Jenny: "It wasn't me!"
Sandy: "It was Nelly!"
Mandy: "It was Sandy!"
Nelly: "Sandy is lying!"

If only one of the girls was telling the truth, who spilt the milk?

- A. Jenny
- B. Mandy
- C. Sandy
- D. Nelly

3.



(A)

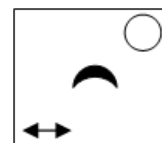
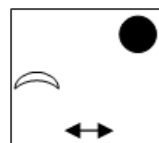
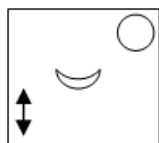
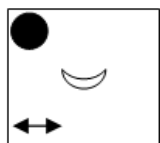
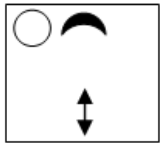
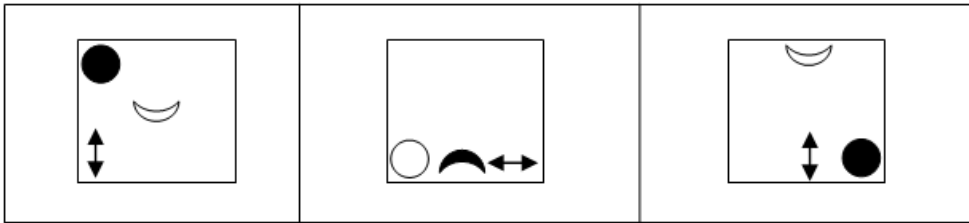
(B)

(C)

(D)

(E)

4.



(A)

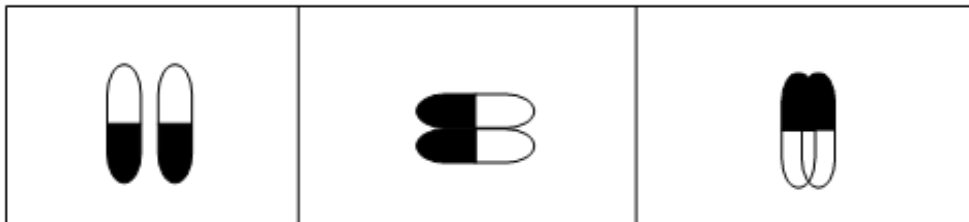
(B)

(C)

(D)

(E)

5.



(A)

(B)

(C)

(D)

(E)