**Math Review Guide-Tips and Methods**

**Easy:**

1. Make sure to calculate surface area AND volume if the question said so
2. **Skew** lines lie in different planes. They do not intersect nor are parallel.

3. **Angles**

|  |  |  |
| --- | --- | --- |
| **Congruent** | Same Measure | Two identical angles |
| **Vertical Angles** | A pair of angles formed by intersecting lines | / |
| **Adjacent Angles** | A pair of angles with a common side and a common vertex, but no common interior points | Like a line inside an angle, stretching out |
| **Complementary Angles** | Two angles whose measures add up to 90% | / |
| **Supplementary Angles** | Two angles whose measures add up to 180% | / |

4. A **dodecagon** has 12 sides.

5.  **Quadrilaterals**

|  |  |
| --- | --- |
| Trapezoid | Only one pair of parallel sides |
| Parallelogram | Two pairs of parallel sides |
| Rhombus | Parallelogram with all sides congruent |

6. 1mi=1760 yd. =5280 ft.

7. Elapsed time—don’t mix up A.M. and P.M.

8. Area of trapezoid: 1/2\*Height(Base1+Base2)

9. **Polyhedron:** three-dimensional figure made up of flat faces

10. Surface Area of Cone:

11. Entire population/samples

12. Representative Sample/Biased sample

13. Random sampling

14. Mean, median, mode and range

15. Frequency tables(make sure to tally) and line plots

16. Cluster/outlier/gap

17. Stem and Leaf plots: KEY

18. Bar graphs: there’s something on each side

19. Line graph: something on each side as well

20. Scatterplot

21. Tree Diagram

22. Permutation and Combination

23. Probability: mutually exclusive **(disjoint)**—no repetition, not mutually exclusive—has repetition

24. Outcome of first draw affects second draw—dependent events

25. Inequalities: divide by negative number—switch sign side

26. Try, check, revise

27. Linear equations—graph

28. Celcius and Farenheit

29. Calculation and mental math skill

**Questions:**

1. Surface Area and Volume

2. Area of Plane Figures

3. Elapsed Time

Start: 8:49 A.M. Start: 6:59 P.M.

Elapsed Time: 9 hours 54 minutes Elapsed Time: 2 hours 11 minutes

End: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ End: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Start: 4:24 A.M. Start: 9:55 P.M.

Elapsed Time: 7 hours 46 minutes Elapsed Time: 11 hours 57 minutes

End: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ End: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

End: 4: 56A.M. End: 4:59 P.M.

Elapsed Time: 7 hours 25 minutes Elapsed Time: 1 hour 33 minutes

End: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ End: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Start: 9:56 A.M. Start: 3:43 P.M.

Elapsed Time: 8 hours 39 minutes Elapsed Time: 12 hours 27 minutes

End: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ End: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Start: 3: 45 A.M. Start: 1:41 P.M.

End: 12:00 P.M. End: 3:11 A.M.

Elapsed Time: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Elasped Time: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Start: 4:29 A.M. Start: 9:55 P.M.

End: 7:58 P.M. End: 2:31 A.M.

Elapsed Time: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Elapsed Time: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

4. Measurements

km—hm—dam—m—dm—cm—mm

3.987 cm=\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_hm 0.000000954 km=\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_cm

89.88 tbsp=\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_c 1788yd=\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_mi

6c=\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_tsp 67900m=\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_km

63 yd=\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_in 873 in=\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ft

5. Probability

Pick one card. Decide if the events are mutually exclusive, then find each probability

Numbers 1-8 are written on 8 red, 8 blue, 8 white, 8 pink and 8 green cards.

|  |  |
| --- | --- |
| P(2 or 3) | P(multiple of 2 or multiple of 3) |
| P(red or blue or pink) | P(prime or odd) |
| P(pink or white) | P(greater than 10) |

Choose one card, replace it, then choose another. Find each probability.

|  |  |  |  |
| --- | --- | --- | --- |
| P(2,2) | P(2,3) | P(not red, red) | P(even, odd) |
| P(not even, odd) | P(multiple of 2, greater than 5) | P(red, green) |  |

Choose one card, without replacement, choose another. Find each probability.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| P(2,2) | P(not red, red) | P(red, green) | P(even, odd) | P(less than 2, greater than 8) |

At Pizza Perfect these toppings are available — pepperoni, mushrooms, olives, Canadian bacon, sausage, and peppers. How many different two-topping pizzas can be made?

How many permutations of 3 different letters are there, chosen from twenty six letters of the alphabet?

A password consists two letters of the alphabet followed by three digits chosen from 0 to 9. Repeats are allowed. How many different possible passwords are there?

An encyclopedia has eight volumes. In how many ways can the eight volumes be replaced on the shelf?

Notes:

A, B, C, D, E, J and R are taking a photo together. How many ways can they stand in one line?

A, B, C, D and E have to split into two groups of 2 and 3. How many ways can they split?

Annie, Bobby, Chloe, Daniel, Ethan, Fenya and Rain are taking a photo. A does not want to be with R. Boys cannot be together. How many was can they stand? (straight line)

How many ways can eight people stand in two rows if the back row must have more people than the front row?

Numbers 0,1,2,3,4,5,6. How many ways can they form a five-digit even number?

Choose three from 1,3,5,7,9

Choose two from 2,4,6,8

How many five digit numbers can they form?

10 people, one is monitor and one is vice monitor. Choose 4 to be in a team, and at least one in the 4 must be a monitor. How many ways can you choose the four?

10 couples, shake hands with each other

1. Don’t shake hands with spouse
2. Women don’t shake hands with each other

How many was can they shake?

1,2,3,4,5 can form how many numbers thats bigger than 200000 and don’t have a 3 in the hundreds place?

Annie, Bobby, Chloe, Daniel, Ethan, Harold, Jenny and Rain are taking a photo together.

The requirement of the photo is:

1. Two rows, 4 in the front, 4 at the back
2. Any one stand at the back row has to be taler than the student in front of him/her.

How many ways can they stand in the two rows?

6. Equations:

|  |  |
| --- | --- |
| 3(2x-5)-2[2x-2(x-5)]=0 | 5x-2(2x+2)=3(3-2x) |
| 0.4(2x-3)+0.2(3-x)=0.6 | 2x-3[x-4(x-5)]=0 |
| 2(2x-3)-7(4+x)-8=4(1-2x) | 6(4x-3)+8(5-3x)+20=2(2x-5) |

7. Mean, Median, Mode and Range

|  |  |
| --- | --- |
| 2, 8 ,35 ,6 ,13 ,6 ,90 | 3, 4 ,1 ,2 ,5 ,8 ,9 ,0 ,0 |
| 4 ,6 ,12 ,34 ,56 ,19 ,0 ,43 | 5, 7, 90, 2, 14 |

|  |  |
| --- | --- |
| x-4(x-5)>15 | 3x+2(5-4x)<2x-12 |
| 4(x+2)<10+3(2x-1) | 0.5x+0.2(2-x)>0.6 |
| 2-0.5(x+3)>15 or 3x-8(x-2)<2x-12 | 2(x-2)-3(4x-1)>9(1-x) and 5(x+8)-5>6(2x-7) |
| 3x-2>10 or 3x-2<-10 | | 2x-7 | -1>0 |
| -2+| 3.6y |<1.1 | 4| 2x+5 |-2>12 |

8. Inequalities

9. Calculation and Mental Math Skill (see worksheet C)

10. Celcius and Farenheit (see notebook)

Formulas:

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

70%C=\_\_\_\_\_\_\_\_\_\_\_%F

-2%C=\_\_\_\_\_\_\_\_\_\_\_\_%F

180%F=\_\_\_\_\_\_\_\_\_\_\_\_%C

-5%F=\_\_\_\_\_\_\_\_\_\_\_\_%C

55%C=\_\_\_\_\_\_\_\_\_\_\_%F

-4%C=\_\_\_\_\_\_\_\_\_\_\_\_%F

18%F=\_\_\_\_\_\_\_\_\_\_\_\_%C

-9%F=\_\_\_\_\_\_\_\_\_\_\_%C

11. Tables (see notebok)

|  |  |
| --- | --- |
| X | Y |
| -2 | 7 |
| 1 | 1 |
| 3 | -3 |

|  |  |
| --- | --- |
| X | Y |
| 2 | 3 |
| 3 | 3.5 |
| 6 | 5 |

|  |  |
| --- | --- |
| X | Y |
| -1 | -5.5 |
| 0 | -0.5 |
| 2 | 9.5 |

|  |  |
| --- | --- |
| X | Y |
| 3 | -2 |
| 0 | -3 |
| -3 | -4 |

Find the rule of each table.

12. Word problem

Mr. Lee had a bag of red beans and a bag of black beans. 20% of the total number of beans was black, and there were 180 more oz more red beans than black beans. He transferred some red beans to the bag containing black beans so that the bag now contained 30% of the total number beans. Hoe many ounces beans were there on the bag of mixed beans?

To increase the sugar concentration of a solution from 15% to 40%, how many ounces of pure sugar must be added to 80oz of the 15% solution?

If you wish to increase the percent of acid in 50 ml of a 15% acid solution in water to 25% acid, how much pure acid must you add?

How many gallons of milk that is 3.5% butterfat must be added to 80 gal of 1% butterfat milk to produce milk that is 2% butterfat?

What is the sum of all the digits in the sequence 1, 2, 3, 4, 5, 6, 7, …99, 100?