Probability and Statistics. Form A

Student Name	Exam 1	Exam 2	Exam 3
Ashley	98	92	93
Liz	73	67	50
Jazz	84	85	93
Kenzi	100	97	94
Sarah	79	82	90

1. For the table above, what is the mean in Exam 3?

(A) 93
(B) 84
(C) 81
(D) 80
(E) 89

$$\text{Mean} = \frac{\text{sum of Exams 3}}{\text{number of Exams 3}}$$

$$= \frac{93+50+93+94+90}{5} = 84$$

2. For the table above, what is Kenzi's average in the three exams?

(A) 94
(B) 100
(C) 95
(D) 98.5
(E) 97

$$\text{Average} = \frac{\text{Exam 1} + \text{Exam 2} + \text{Exam 3}}{3}$$

$$= \frac{100+97+94}{3} = 97$$

3. In the table above, what is the mode for Exam 3?

(A) 0
(B) 90
(C) 50
(D) 84
(E) 93

number that appears the most

93
50
93 → appears twice
94 → others appear once
90

4. In the table above, what is the median for Exam 1?

(A) 100
(B) 84
(C) 93
(D) 85

Rank

73 79 **84** 98 100

Median

Median is number that separate list in half

(E) 73

5. In the table below, what score does Jack need to make in Exam 4 to average 65?

Student Name	Exam 1	Exam 2	Exam 3	Exam 4
Jack	73	67	50	?

(A) 69
(B) 71
(C) 70
(D) 70.5
(E) 86

$$65 = \frac{73+67+50+x}{4}$$

$$(4)(65) = 73+67+50+x$$

$$x = 260-73-67-50$$

$$x = 70$$

6. A runner's time for a 5K race is shown in the table below for each kilometer. If the runner averaged 5.9 minutes per kilometer for the race, what was the average time in minutes for the 2nd and 4th kilometers if the runner runs them at the same pace?

Kilometer	1st	2nd	3rd	4th	5th
Time(minutes)	5	a	5.5	a	7

(A) 5
(B) 7
(C) 5.5
(D) 12
(E) 6

$$5.9 = \frac{5+a+5.5+a+7}{5}$$

$$(5)(5.9) = 5+2a+5.5+7$$

$$2a = 29.5-5-5.5-7 = 12 \qquad a = \frac{12}{2} = 6$$

7. A bag of candy Skittles contains 7 red skittles, 5 purple skittles, 4 yellow skittles, 5 green skittles, and 4 orange skittles. What is the probability of randomly picking a purple skittle?

(A) $\frac{1}{25}$
(B) $\frac{5}{19}$
(C) $\frac{1}{5}$

$$\text{Probability of purple} = \frac{\#\text{ of purple skittle}}{\text{Total \# of skittles}}$$

$$= \frac{5}{7+5+4+5+4}$$

$$= \frac{5}{25} = \frac{1}{5}$$

(D) $\frac{1}{2}$

(E) $\frac{1}{4}$

8. A bag of candy Skittles contains 7 red skittles, 5 purple skittles, 4 yellow skittles, 5 green skittles, and 4 orange skittles. What is the probability of randomly picking a purple or green skittle?

(A) $\frac{2}{5}$

(B) $\frac{1}{5}$

(C) $\frac{3}{5}$

(D) $\frac{1}{25}$

(E) $\frac{1}{4}$

P(purple or green) = P(purple) + P(green)

OR means you add

$P(\text{purple}) = \frac{5}{7+5+4+5+4} = \frac{5}{25} = \frac{1}{5}$

$P(\text{green}) = \frac{5}{25} = \frac{1}{5}$

So $P(\text{purple or green}) = \frac{1}{5} + \frac{1}{5} = \frac{2}{5}$

9. The blood types of 70 students were determined for as shown in the figure below. If one student is randomly selected, what is the probability this student has either Type O or Type AB blood?

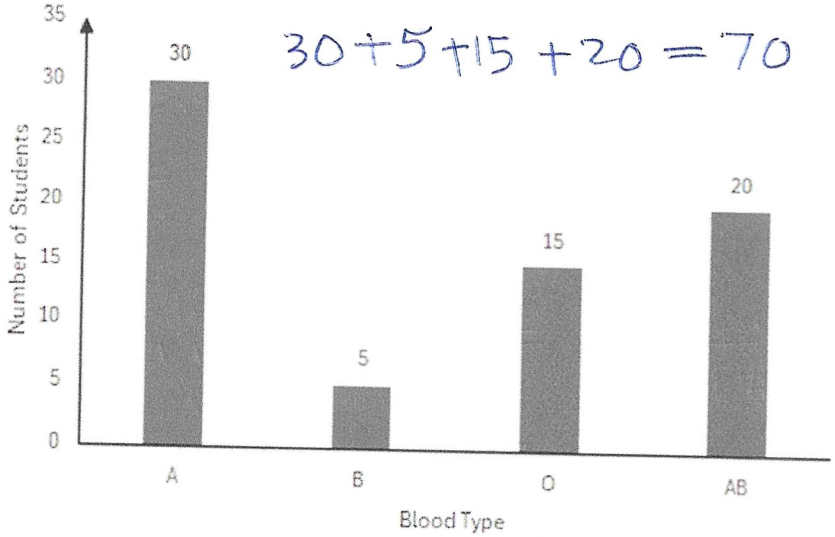
(A) $\frac{3}{14}$

(B) $\frac{2}{7}$

(C) $\frac{6}{98}$

(D) $\frac{1}{2}$

(E) $\frac{1}{4}$



30 + 5 + 15 + 20 = 70

P(Type O or Type AB) = $\frac{15}{70} + \frac{20}{70} = \frac{35}{70} = \frac{1}{2}$

add

10. Sam bought 6 tickets for a fundraising raffle to win a car. If a total of 750 tickets were sold. What is the probability that Sam will win the raffle?

(A) $\frac{6}{125}$

(B) $\frac{1}{125}$

(C) $\frac{1}{6}$

(D) $\frac{1}{1000}$

(E) $\frac{1}{25}$

$\frac{6}{750} = \frac{1}{125}$

11. You roll two six-sided dice. What is the probability the first dice will show a 5 and the other will show a 2?

(A) $\frac{7}{36}$

(B) $\frac{5}{36}$

(C) $\frac{1}{36}$

(D) $\frac{1}{6}$

(E) $\frac{1}{18}$

$P(5 \text{ and } 2) = P(5)\,P(2)$

$= \frac{1}{6}\,\frac{1}{6} = \frac{1}{36}$

and means you multiply

12. Suzan has a jar of marbles with 15 red, 10 blue, and 5 yellow. If she randomly selects two marbles without replacing them, what's the probability she selects first the yellow then the red?

(A) $\frac{1}{12}$

(B) $\frac{5}{163}$

30

First selection

$P(\text{yellow}) = \frac{5}{30} = \frac{1}{6}$

second selection (there are now 29 marbles left)

$P(\text{red}) = \frac{15}{29}$

$P(\text{yellow and red}) = \frac{1}{6} \times \frac{15}{29} = \frac{15}{174}$

(C) $\frac{1}{6}$

(D) $\frac{2}{3}$

(E) $\frac{15}{174}$

13. In a set of integers from 2 to 9, inclusive, what is the probability of selecting a prime number?

[2 to 9] [2, 3, 4, 5, 6, 7, 8, 9]

(A) $\frac{1}{2}$

$P(\text{Prime}) = \frac{4}{8} = \frac{1}{2}$

(B) $\frac{2}{9}$

(C) $\frac{3}{8}$

(D) $\frac{1}{9}$

(E) $\frac{1}{4}$

14. A restaurant has a staff of 15 people. Six people are male and 9 people are female. Two people are randomly chosen. What is the probability that both are female?

(A) $\frac{81}{225}$

First selection

female and female (multiply)

$P(\text{Female}) = \frac{9}{15}$

2nd selection (There are now 14 people left and 8 female left)

(B) $\frac{3}{5}$

(C) $\frac{3}{8}$

(D) $\frac{12}{35}$

$P(\text{Female}) = \frac{8}{14}$

(E) $\frac{17}{30}$

$P(\text{female and female}) = \frac{9}{15} \times \frac{8}{14} = \frac{72}{210} = \frac{12}{35}$

15. What are the odds of rolling a 3 on a fair six-sided die?

Odds

getting a 3 : Not getting a 3

1 : 5

(A) 1:5
(B) 1:6
(C) 3:6
(D) 1:3
(E) 1:2

16. In a box of 16 marbles, 4 are white, 3 are black, and 9 are blue. If a marble is selected at random, what is the probability of selecting a marble that's not white?

(A) $\frac{1}{4}$
(B) $\frac{3}{16}$
(C) $\frac{1}{2}$
(D) $\frac{11}{16}$
(E) $\frac{3}{4}$

$4+3+9$

$P(\text{white}) = \frac{4}{16}$

$P(\text{not white}) = 1 - \frac{4}{16} = \frac{16}{16} - \frac{4}{16} = \frac{12}{16}$

$= \frac{3}{4}$

17. You roll a six-sided die. What's the probability of not getting a 6?

(A) $\frac{1}{6}$
(B) $\frac{5}{6}$
(C) $\frac{1}{2}$
(D) $\frac{1}{12}$
(E) $\frac{3}{4}$

$P(6) = \frac{1}{6}$

$P(\text{not } 6) = 1 - \frac{1}{6} = \frac{6}{6} - \frac{1}{6} = \frac{5}{6}$

18. If a gumball is selected randomly from a bag that has 6 green gumballs, 4 yellow, and 10 red. What is the probability of selecting a red gumball?

(A) 1
(B) $\frac{1}{20}$
(C) $\frac{1}{2}$

$6+4+10 = 20$

$P(\text{red}) = \frac{10}{20} = \frac{1}{2}$

(A) 1

(B) $\frac{1}{20}$

(C) $\frac{1}{2}$

(D) $\frac{1}{5}$

(E) $\frac{3}{10}$

19. What is the probability that a number selected at random from the set {2,3,7,12,15,16, 19} will be divisible by 3?

set has 7 number, 3 of them are divisible by 3

so P(divisible by 3) $= \frac{3}{7}$

(A) $\frac{1}{3}$

(B) $\frac{3}{5}$

(C) $\frac{1}{2}$

(D) $\frac{3}{7}$

(E) $\frac{3}{4}$

20. You flip a fair coin 2 times. What's the probability of getting two heads?

(A) $\frac{1}{4}$

(B) $\frac{2}{5}$

(C) $\frac{1}{2}$

(D) $\frac{1}{3}$

(E) $\frac{3}{4}$

First flip

P(head) $= \frac{1}{2}$

2nd Flip

P(head) $= \frac{1}{2}$

P(head and head) $= \frac{1}{2} \cdot \frac{1}{2} = \frac{1}{4}$

Answers

1. B
2. E
3. E
4. B
5. C
6. E
7. C
8. A
9. D
10. B
11. C
12. E
13. A
14. D
15. A
16. ~~D~~ E
17. B
18. C
19. D
20. A