

Probability & Data Analysis Gr 8 TEST Review

Multiple Choice

Identify the choice that best completes the statement or answers the question.

- B** 1. Dr. Shaban measured the height of his daughter every year from her birth to age 14. To see the trend of growth in height, which type of graph would be appropriate to display the data?  
 a. Pictograph **b. Line graph** c. Bar graph d. Circle graph

- D** 2. Rob and Rebecca organized a bottle recycling program in their school. Rob recorded the number of bottles collected by each boy in his team. Rebecca recorded the number of bottles collected by each girl in her team. Which type of graph would be appropriate to display the data?  
 a. Scatter plot c. Double-line graph  
**b. Circle graph** **d. Double-bar graph**

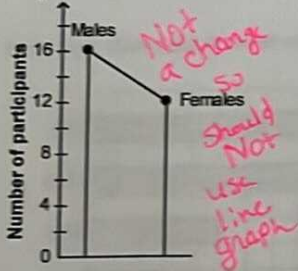
- C** 3. This table shows the number of students participating in the school recycling program over 5 years.

Year	2004	2005	2006	2007	2008
Number of Students	52	73	87	103	121

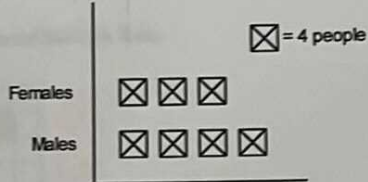
- Which type of graph would you use if you want to look for a trend?  
 a. Circle graph b. Bar graph **c. Line graph** d. Pictograph

- A** 4. These graphs show the number of males and females who took part in a survey.

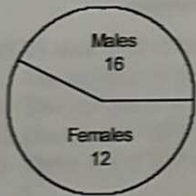
Graph A



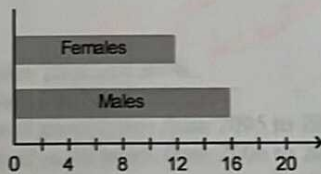
Graph B



Graph C



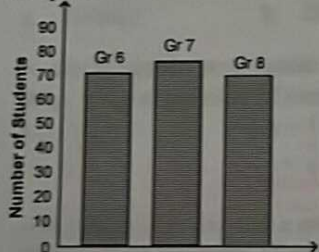
Graph D



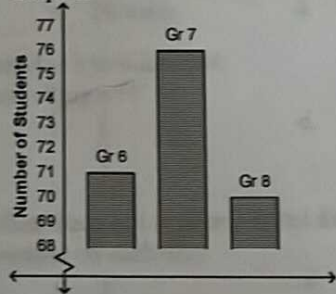
- Which graph would be the least suitable way to display the data?  
 a. Graph A b. Graph B c. Graph C d. Graph D

- D** 5. These 2 graphs show the number of students getting an average mark of 80 or higher in each grade at Glenwood Middle School.

Graph A



Graph B



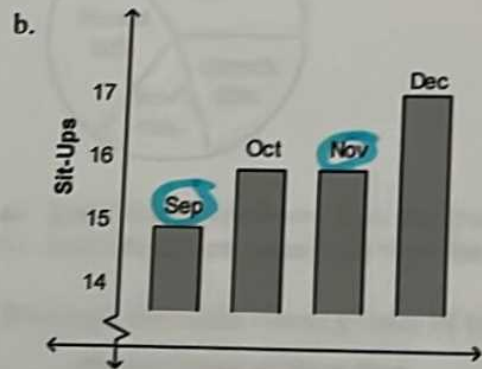
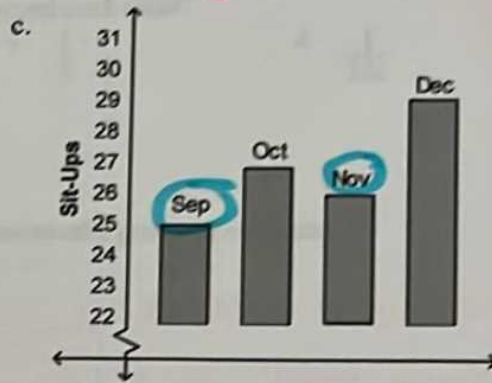
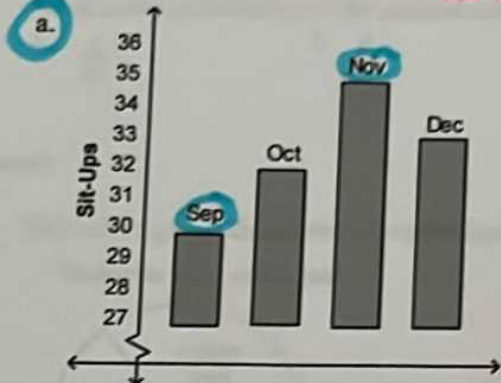
*Same data But B does not start @ zero. Both graphs you can see change in # of student in each grade. But B exaggerates the difference.*

- Which statement is true?  
 a. The 2 graphs are exactly the same.  
 b. Graph A exaggerates the number of students getting 80 or higher.  
 c. Graph B shows greater changes in the number of students getting 80 or higher.  
**d. Graph B exaggerates the differences in the number of students getting 80 or higher.**

Graph A & B display the same data of # of students at Glenwood Middle School getting an average mark of 80 or higher in grade 6, 7, and 8

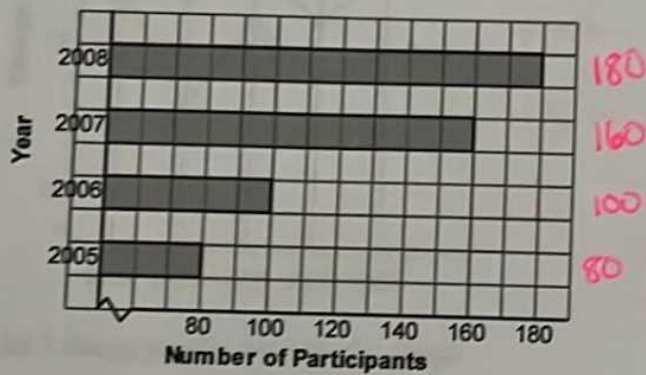
Graph A makes it like there is relatively the same amount of people making 80 or above in each class. But graph B makes it look like that there is a huge difference in # of student that make 80 or above between grade 6, 7, & 8 because it does not start at zero.

A 6. Which graph suggests that the number of sit-ups Ray did in November was more than double the number of sit-ups he did in September? *Just compare heights*



*Means Nov is bigger than Sep*

B 7. The graph shows the number of participants in the Fun Run.



Which statement is true?

- i) The number of participants doubled between 2005 and 2006.
- ii) The number of participants doubled between 2005 and 2007.
- iii) There was a 100% increase in the number of participants from 2005 to 2008.
- iv) There was a 100% increase in the number of participants from 2006 to 2007.

- a. i
- b. ii
- c. iii
- d. iv

*80 → 160 Not doubled*

*in 2005 it's 80 and if you did 100% increase of that it would be 80 + 80 = 160 NOT the case*

*2006 = 100 2007 = 160 only 60% increase*

D 8. A clothing manufacturer offers 2 different styles of jeans, relaxed fit and regular fit, in 5 different colours. How many combinations of a style and a colour are possible?

- a. 4
- b. 8
- c. 7
- d. 10

*2x5 = 10*

A 9. Ms. Wong is redecorating her office. She has choices of 6 colours of carpet and 4 styles of furniture. How many possible ways can she choose a colour of carpet and a style of furniture?

- a. 24 ways
- b. 20 ways
- c. 28 ways
- d. 10 ways

*6x4 = 24*

A 10. A coin is tossed and a regular 6-sided die labelled 1 to 6 is rolled. What is the probability of tossing a head and rolling a 5?

- a.  $\frac{1}{12}$
- b.  $\frac{1}{4}$
- c.  $\frac{2}{3}$
- d.  $\frac{1}{6}$

*$P(H) \times P(5) = \frac{1}{2} \times \frac{1}{6} = \frac{1}{12}$*

D 11. A red die, a blue die, and a green die are rolled. Each is a regular 6-sided die labelled 1 to 6. What is the probability of rolling an even number on each die?

- a.  $\frac{1}{6}$
- b.  $\frac{1}{216}$
- c.  $\frac{1}{2}$
- d.  $\frac{1}{8}$

*$P(\text{Even Blue, even Green, (Even) (Even)}) = P(\text{Even}) \times P(\text{even}) \times P(\text{even}) = \frac{3}{6} \times \frac{3}{6} \times \frac{3}{6} = \frac{1}{8}$*

B 12. Find the probability that 4 students chosen at random are all born on a Wednesday.

- a.  $\frac{1}{256}$
- b.  $\frac{1}{2401}$
- c.  $\frac{4}{2401}$
- d.  $\frac{1}{28}$

*$P(\text{wed}) \times P(\text{wed}) \times P(\text{wed}) \times P(\text{wed}) = \frac{1}{7} \times \frac{1}{7} \times \frac{1}{7} \times \frac{1}{7} = \frac{1}{2401}$*

*$\frac{1}{2} \times \frac{1}{2} \times \frac{1}{2} = \frac{1}{8}$*

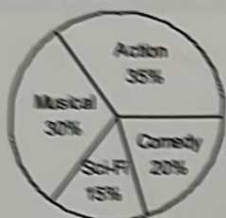
13. A spinner has 12 equal sectors. 4 sectors are coloured red, 3 are coloured blue, and 5 are coloured yellow. The pointer on the spinner is spun 3 times. **3 events**  
 What is the probability of the pointer landing on red each time?
- a.  $\frac{1}{27}$       b.  $\frac{1}{4}$       c.  $\frac{1}{3}$       d.  $\frac{1}{144}$

$P(\text{Red}) \times P(\text{Red}) \times P(\text{Red})$   
 $\frac{4}{12} \times \frac{4}{12} \times \frac{4}{12}$   
 $\frac{1}{3} \times \frac{1}{3} \times \frac{1}{3}$   
 $\frac{1}{27}$

Short Answer

14. This circle graph shows the favourite type of movies of a group of students.

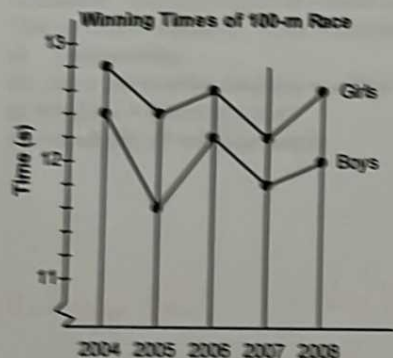
Favourite Type of Movies



- a) Musical is the Favourite type of Movies  
 Sci-Fi is the Least favourite type of Movie  
 ii) More people like Actions over Comedy movies.  
 b) Can't tell the # of people who like each type of Movie.

- a) List 3 things you know from the graph.  
 b) List 1 thing you cannot tell from the graph.

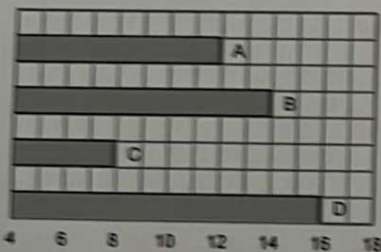
15. The graph shows the winning times of boys and girls for the inter-school 100-m race for 5 years.



- \* Remember Higher times means more slower  
 i) From 2004 - 2008 the girls always ran slower than Boys  
 ii) In 2004 the girls took 12.85 to complete 100m race  
 iii) In 2004 the boys took 12.45 to complete 100m race.

List 3 things you know from the graph.

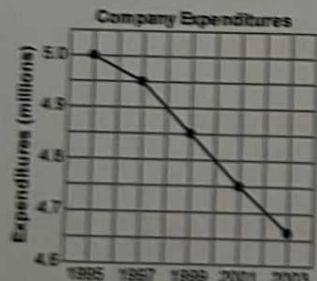
16. This graph shows the population, in thousands, of 4 towns.



- a) 'A' is 8 blocks and 'C' is 4 blocks so A looks twice as big as 'C'.  
 b) A = 12, B = 14, C = 8, D = 16  
 'D' has twice the population of 'C'.

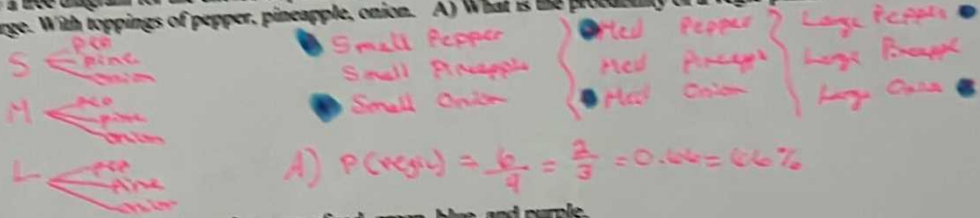
- a) Which town appears to have about twice the population of Town C?  
 b) Which town actually has twice the population of Town C?  
 c) Explain why the graph is misleading.

17. This graph shows the expenditures of a company over several years.



- a) Why is this graph misleading?  
 The scale does not start at zero  
 b) Explain how the graph could be changed to present the data more accurately. Start at zero and change scale to go up by constant scale.

18. Draw a tree diagram for the choice of pizza combination for a 1-topping pizza. You can order Small, Medium or Large. With toppings of pepper, pineapple, onion. A) What is the probability of a veggie-pizza?



$$A) P(\text{vegie}) = \frac{6}{9} = \frac{2}{3} = 0.66 = 66\%$$

19. A spinner is divided into 4 equal sectors of red, green, blue, and purple. A regular 6-sided die labelled 1 to 6 is rolled and the pointer of the spinner is spun. What is the probability of rolling an even number and the pointer landing on red?

$$\begin{aligned} P(\text{even, Red}) &= P(\text{Even}) \times P(\text{Red}) \\ &= \frac{3}{6} \times \frac{1}{4} \\ &= \frac{1}{2} \times \frac{1}{4} \\ &= \frac{1}{8} = 0.125 = 12.5\% \end{aligned}$$

20. A bag contains 15 red marbles, 4 blue marbles, and 1 yellow marbles. A student removes 1 marble without looking, records the colour, then returns the marble to the bag. The process is repeated. What is the probability of each outcome?
- 2 red marbles
  - not a red marble, then not a yellow marble
  - P(yellow 4 times in a row)
  - Probability of red then purple

$$\begin{aligned} a) P(\text{Red and Red}) &= P(\text{Red}) \times P(\text{Red}) \\ &= \frac{15}{20} \times \frac{15}{20} \\ &= \frac{4}{5} \times \frac{4}{5} \\ &= \frac{16}{25} \\ &= 0.64 \\ &= 64\% \end{aligned}$$

$$\begin{aligned} b) P(\text{Not Red, Not Yellow}) &= P(\text{Not Red}) \times P(\text{Not Yellow}) \\ &= \frac{5}{20} \times \frac{19}{20} \\ &= \frac{1}{4} \times \frac{19}{20} \\ &= \frac{19}{80} \\ &= 0.2375 \\ &= 23.75\% \end{aligned}$$

$$\begin{aligned} c) P(Y, Y, Y, Y) &= P(Y) \times P(Y) \times P(Y) \times P(Y) \\ &= \frac{1}{20} \times \frac{1}{20} \times \frac{1}{20} \times \frac{1}{20} \\ &= \frac{1}{16000} \\ &= 0.0000625 \\ &= 0.000625\% \end{aligned}$$

$$\begin{aligned} d) P(R, P) &= P(R) \times P(P) \\ &= \frac{15}{20} \times \frac{0}{20} \\ &= 0 \\ &= 0\% \end{aligned}$$