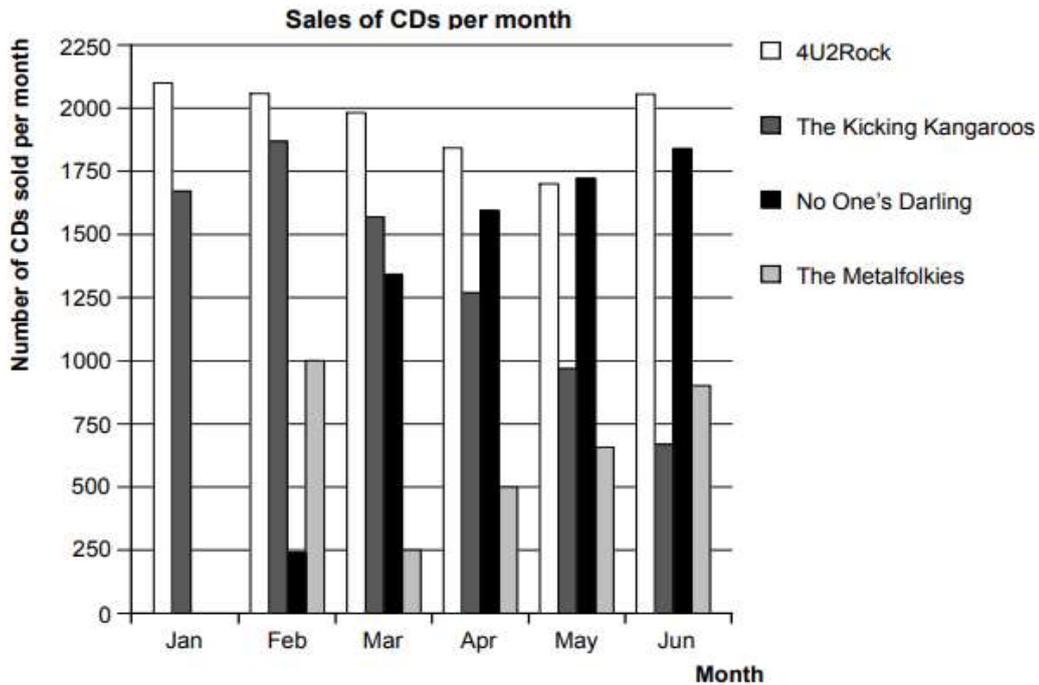


Class 8  
Sample paper

*Rock Band*

*(Societal)*

In January, the new CDs of the bands 4U2Rock and *The Kicking Kangaroos* were released. In February, the CDs of the bands *No One's Darling* and *The Metalfolkies* followed. The following graph shows the sales of the bands' CDs from January to June.



Q1. How many CDs did the band The Metalfolkies sell in April?

- a) 250            b) 500            c) 1000            d) 1270

Q2. In which month did the band No One's Darling sell more CDs than the band The Kicking Kangaroos for the first time?

- a) No month    b) March    c) April            d) May

Q3. The manager of The Kicking Kangaroos is worried because the number of their CDs that sold decreased, from February to June. What is the estimate of their sales volume for July if the same negative trend continues?

- a) 70 CDs            b) 370 CDs    c) 670 CDs            d) 1340 CDs

*Let's Decode*

Most grocery products include an identifying Bar Code on their wrappers. Many supermarkets use these bar codes for totaling sales at the checkout, using a light pen to read this code. Shown here is an 8 digit version of one such bar code.

*Occupational*



The 8 digit bar code number is divided into 3 parts :

- 1st & 2nd digit (from left) : Retailer's Code
- 3rd to 7th digit : Product code.
- 8th digit. Check digit.

For the bar code shown above, the different parts are ;

- Retailer Code : 00
- Product Code : 34600
- Check digit : 9

The check digit is chosen so that  $3 \times (1\text{st} + 3\text{rd} + 5\text{th} + 7\text{th digit}) + (2\text{nd} + 4\text{th} + 6\text{th} + 8\text{th digit})$  is exactly divisible by 10.

**Q4.** If  $x$  is the sum of digits at odd places and  $y$  is the sum of digits at even places of an 8 digit bar code, what is the general rule that the code should satisfy?

- a)  $x + y$  should be a multiple of 10
- b)  $3 + x + y$  should be a multiple of 10.
- c)  $3x + y$  should be a multiple of 10
- d)  $3(x+y)$  should be a multiple of 10.

**Q5.** Shown here is the bar code, that was printed on the label of a toy. However the 7th digit of the code was scratched out. Which of the following could be the product code?

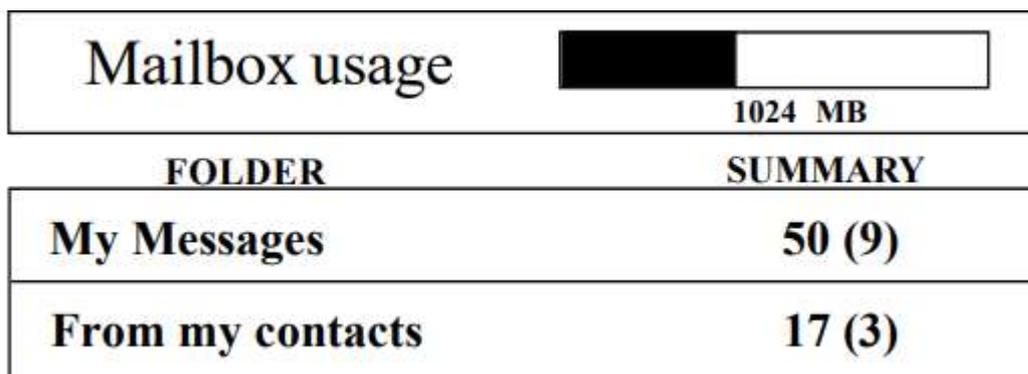
- a) 5016860
- b) 16862
- c) 16864
- d) 16860



## *My Inbox*

*(Personal)*

Shown below is the summary of Kim's email box:



The total number of messages in each folder is displayed in the summary, while the number in the bracket shows the number of unread messages in that folder.

**Q6.** Calculate the number of unread messages which are not from "my contacts"?

**Q7.** The shaded part represents the space used in the mailbox, having a total space of 1024 MB. Calculate the best approximation of the unused space.

## Who Wins the Match

(Societal)

In an online game, a player has to predict the winner of an England vs Australia cricket match. The player can choose to play for any number of points he wants and get a score against the number of points played for. The relation between the points played for and the score obtained (for different predictions) is shown in this table:

Predication	Points played for	Score obtained if prediction is right
England wins	3	2
Australia wins	5	7
Draw	1	4

For example, if a player plays for 12 points predicting a win for England, he will get a score of 8 if England actually wins. The points played for by a player cannot exceed 999.

**Q8.** Lisa wants to get a score more than 1000. Which of the following predictions could she go for?

- a) She could predict either a win for England or a win for Australia
- b) She could predict either a draw or a win for Australia
- c) She can predict a win for England only.
- d) She can predict a win for Australia only.

**Q9.** Nik and John both predicted a win for England. The difference between the points they played for, was 36. What will be the difference between their scores if their prediction turned right?

## Design Your Yearbook

(Personal)

You are an editor for your school year book. Each row of photos is  $8\frac{5}{8}$  inches wide, including the margins at the both end of the page. Each photo is  $1\frac{1}{4}$  inches wide, the space between each photo is  $\frac{1}{8}$  inch and each margin is  $\frac{1}{4}$  inch.

**Q10.** How many photos can fit in one row?

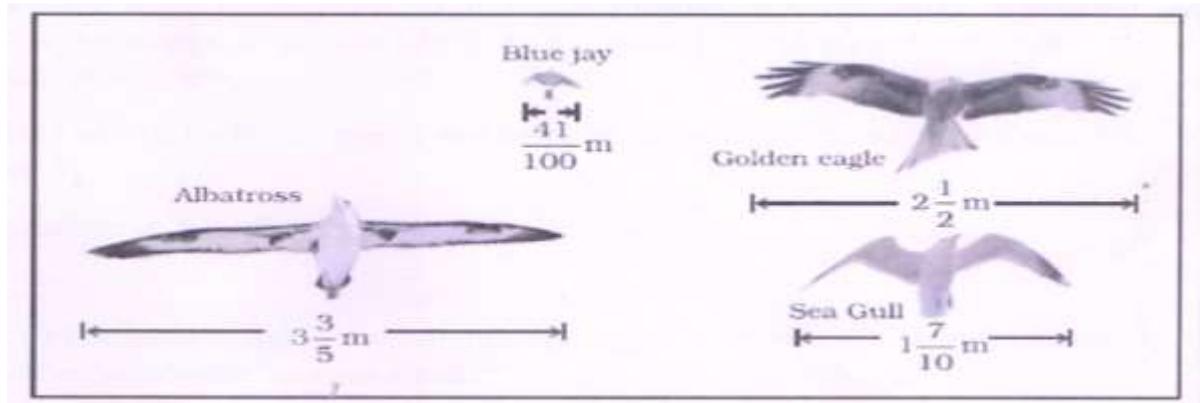


## Birds:

## (Scientific)

Birds have many physical features, besides wings, that work together to enable them to fly. They need lightweight, streamlined and rigid structures for flight. The shape of a bird's wing is important for producing lift. The increased speed over a curved, larger wing area creates a longer path of air. This means the air is moving more quickly over the top surface of the wing, reducing air pressure on the top of the wing and creating lift. Also, the angle of the wing (tilted) deflects air downwards, causing a reaction force in the opposite direction and creating lift.

Larger wings produce greater lift than smaller wings. So smaller-winged birds (and planes) need to fly faster to maintain the same lift as those with larger wings.



The diagram shows the wing spans of different species of birds. Use the diagram to answer the questions given below:

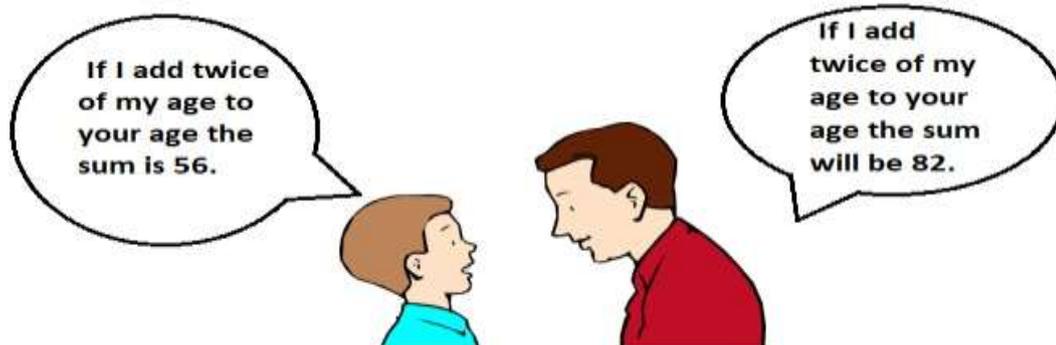
Q11. How much longer is the wingspan of a Golden eagle than the wingspan of a Blue jay?

## Father's Day

## (Personal)

Father's Day is a celebration honoring fathers and celebrating fatherhood, paternal bonds and the influence of fathers in society. On the occasion of Father's Day, Father and son were discussing about finding present ages of each other. On Father's Day, son wants to give gift to his father. Father lays down a condition that he will only accept the gift if he is able to find age of himself and his father correctly.

Q12. Find their present ages.



## Recycling

(Scientific)

Recycling is the process of converting waste material into new material and objects. It is an alternative to "conventional" waste disposal that can save material and help lower greenhouse gas emissions. Recycling can prevent the waste of potentially useful material and reduce the consumption of fresh raw material, thereby reducing: energy usage, air pollution (from incineration), and water pollution (from landfilling).

Recycling is a key component of modern waste reduction and is the third component of the "Reduce, Reuse, and Recycle" waste hierarchy. Thus, recycling aims at environmental sustainability by substituting raw material inputs into and redirecting waste outputs out of the economic system.

By understanding the value and benefits of recycling, Aditya decided to set up a small recycling plant. He collected materials like aluminium, paper, glass, etc. and started to recycle them in the best possible way.

<u>MATERIAL</u>	<u>RECYCLED</u>
<b>PAPER</b>	<b>5/11</b>
<b>ALUMINIUM CASE</b>	<b>5/8</b>
<b>GLASS</b>	<b>2/5</b>
<b>SCRAP</b>	<b>3/4</b>

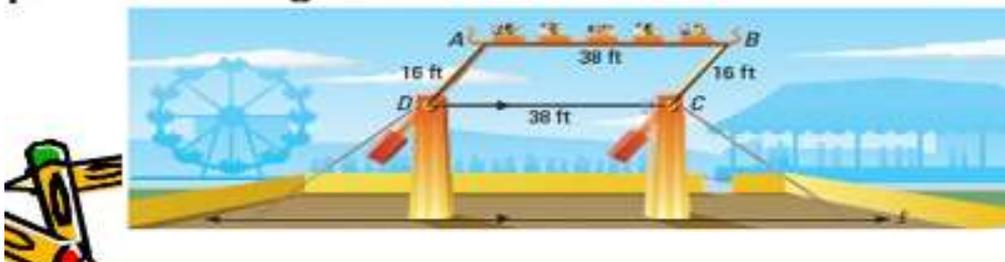
Q13. Which items have a recycled amount less than  $1/2$  ?

Q14. Find out the percentages of material recycled ?

Q15. *Ride*

(Societal)

An amusement park ride has a moving platform attached to four swinging arms. The platform swings back and forth, higher and higher, until it goes over the top and around in a circular motion. In the diagram below,  $\overline{AD}$  and  $\overline{BC}$  represent two of the swinging arms, and  $\overline{DC}$  is parallel to the ground (line  $l$ ). **Explain why the moving platform  $AB$  is always parallel to the ground.**



## Answer Key

- Ans 1:** Option (b) 500 : Direct observation from graph
- Ans 2.** Option (c) April : Direct observation and comparison from graph
- Ans 3.** Option (b) 370 CDs : Interpret the graph & estimate the number of CDs sold in the future, assuming the linear trend continues.
- Ans 4.** Option (c) : Interpret the situation as per equation.
- Ans 5.** Option (b) :  $3(5+1+8+x+0+6+6)$   
 $3(14+x) + 12$   
 $42+3x+12+54+3x$   
If  $x=2$  then total 60 multiple of ten.

**Ans 6.**  $9 - 3 = 6$

**Ans 7.** Approx. 650-700 MB (more than 50% of the space is vacant)

**Ans 8.** Option (b)

**Ans 9.** 24

Let Nik play for  $x$  times

And John play for  $y$  times

$\therefore$  ATQ for points played  $3x-3y=36$

$\therefore x - y = 12$

For Score then  $2x - 2y = 12 \times 2 = 24$

**Ans 10.** 6 photos

Let the photos be  $n$

$\therefore$  ATQ

$$n \times 1\frac{1}{4} + \frac{1}{4} + \frac{1}{4} + (n-1)\frac{1}{8} = 8\frac{5}{8}$$

$$n \times \left(\frac{5}{4}\right) + \frac{1}{4} + \frac{1}{4} + \frac{n-1}{8} = \frac{69}{8}$$

$$\frac{5n}{4} + \frac{1}{4} + \frac{1}{4} + \frac{n-1}{8} = \frac{69}{8}$$

$$\frac{10n+2+2+n-1}{8} = \frac{69}{8}$$

$$11n+3=69$$

$$11n=66$$

$$n=6$$

**Ans 11.** Wingspan of the Golden Eagle: 2.5m Wingspan of the Blue Jay : 0.41m  
Difference between the wingspan of Golden Eagle and the wingspan of a Blue Jay is  $2.5\text{m} - 0.41\text{m} = 2.09\text{m}$

**Ans 12.** Let son's age be  $x$  yrs and father's age be  $y$  yrs

$$2x + y = 56$$

$$x + 2y = 82$$

On solving these equations we find that the son's age is 10 yrs and the father's age is 36yrs

**Ans 13.** Paper & glass have recycling amount of less than  $1/2$

**Ans 14.** %age of material recycled :

Paper	$= \frac{5}{11} * 100$	$= \frac{500}{11}$	$= 45.45\%$
Aluminium Cans	$= \frac{5}{8} * 100$	$= \frac{500}{8}$	$= 62.5\%$
Glass	$= \frac{2}{5} * 100$	$= \frac{200}{5}$	$= 40\%$
Scrap	$= \frac{3}{4} * 100$	$= \frac{300}{4}$	$= 75\%$

**Ans 15.** The shape of quadrilateral  $ABCD$  changes as the moving platform swings around, but its side lengths do not change. Both pairs of opposite sides are congruent, so  $ABCD$  is a parallelogram

By the definition of a parallelogram,  $\overline{AB} \parallel \overline{DC}$ .  
Because  $\overline{DC}$  is parallel to line  $l$ ,  $\overline{AB}$  is also parallel to line  $l$  by the Transitive Property of Parallel Lines.  
So, the moving platform is parallel to the ground.