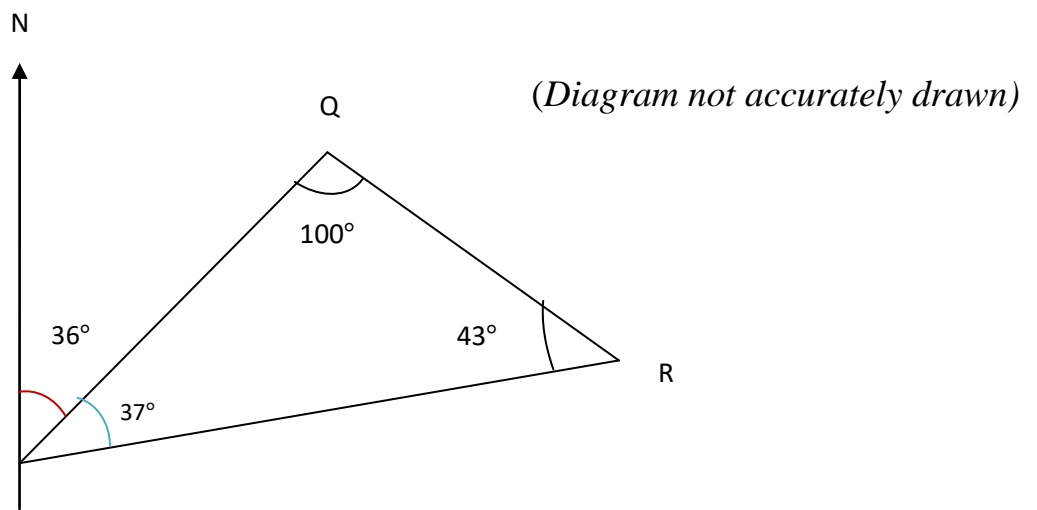


INTERNATIONAL PRIME SCHOOL

Worksheet: Week-4; Sub: Maths-B

Class: IX

1. The figure shows the position of P, Q and R.



Find the bearing of

i) Q from P,

ii) P from Q,

iii) R from P,

iv) P from R

v) Q from R

vi) R from Q.

2. P, Q and R are three points on level ground. Given that the bearing of R from P is

135° , $\angle PQR = 55^\circ$ and $\angle PRQ = 48^\circ$, find the bearing of

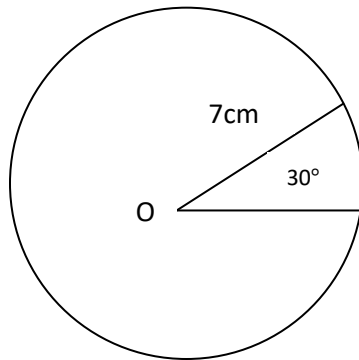
i) P from R,

ii) Q from R,

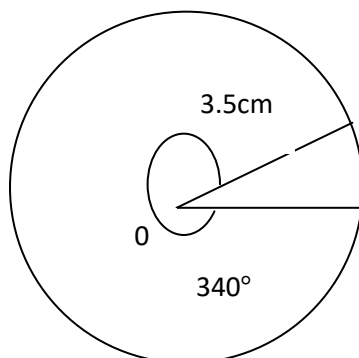
iii) P from Q

3. A, B and C are three points on level ground. Given that the bearing of B from A is 122° , $\angle CAB = 32^\circ$ and $\angle ABC = 86^\circ$, find the possible bearing(s) of C from B.
4. A bus stop is 280 m due north of a taxi stand. Nora walks from the taxi stand in the direction 050° . Calculate how far she has to walk before she is
- equidistant from the bus stop and the taxi stand,
 - as close as possible to the bus stop,
 - due east of the bus stop.
5. A helicopter flies 30 km from a point P to another point Q on a bearing of 128° . It then flies another 25 km to a point R on a bearing of 295° . Find the distance between P and R.
6. For each of the following circles, find
- the perimeter,
 - the area
- of the minor sector. *(Diagram not accurately drawn)*

a)

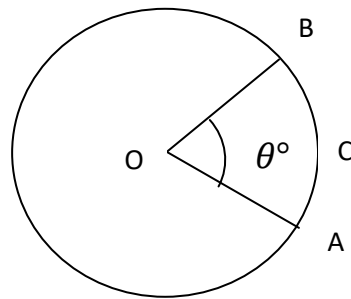


b)



(Diagram not accurately drawn)

7. The figure shows a circle with centre O and $\angle AOB = \theta^\circ$. The circumference of the circle is 88 cm.

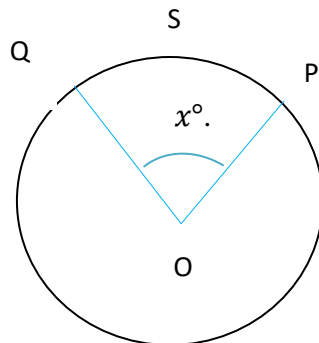


(Diagram not accurately drawn)

Find the length of arc ACB and area of sector OACB for each of the following values of θ .

- | | |
|--------|--------|
| a) 60 | b) 99 |
| c) 126 | d) 216 |

8. The figure shows a circle with centre O and $\angle POQ = x^\circ$. The area of the circle is 3850 cm^2 .



(Diagram not accurately drawn)

Find the area of sector OPSQ and the length of arc PSQ for each of the following

Values of x .

- | | |
|--------|--------|
| a) 36 | b) 84 |
| c) 108 | d) 198 |

INTERNATIONAL PRIME SCHOOL

Worksheet: Week-4; Sub: Pure Maths

Class: IX

1. Solve the following equations:

i) $4^{x+\frac{1}{2}} + 8 = 2^{x+4} + 2^x$

ii) $2^{x-1} = 16 + 2^{x+1}$

iii) $9^x + 7(3^{x-1}) = 16$

iv) $\log(2x^2 - 3) - \log 5 = 2 \log x - \log 3$

v) $2 \log(3 - 2x) = \log(2x - 1) + \log x$

vi) $\log_{(11x-x^2)} 28 = 1$

vii) $\log(3x + 1) + \log(3x - 1) = 3 \log 2 + \log x$

viii) $1 + 2 \log x = \log(11x - 3)$

ix) $1 + 2 \log(x + 1) = \log(2x + 1) + \log(5x + 8)$

x) $2 \log x + \log 4 = \log(9x - 2)$

xi) $\log_3(4x) + \log_3(x - 1) = 1$

xii) $\log(20y) - \log(y - 8) = 2$

xiii) $3 \log(x - 1) = \log 8$

2. If $3^{x+y} = 1$ and $7^{3x-y} = 49$, find the numerical values of 4^{y-x} and x^y .

3. Given that $y = ax^b + 7$, that $y = 79$ when $x = 2$ and that $y = 16$ when $x = 4$, calculate the numerical values of a and b .

4. Given that $\frac{3}{2} \log y = 3 + 3 \log x$, find the value of x when $y = 9$ without the use of a calculator.

5. Solve the simultaneous equations.

i) $2^x - 5^y = 3$, $2^{x-3} = 21 - 5^{y-2}$

ii) $\log_2(2x + y) = 1$, $\log_8(4x^2 - y^2) = 1\frac{1}{3}$

6. If $x^2 + y^2 = 11xy$, prove that $\log(x - y) = \frac{1}{2}\log x + \frac{1}{2}\log y + \log 3$

7. Given that $\log_8(x + 2) + \log_8 y = z - \frac{1}{3}$ and that $\log_2(x - 2) - \log_2 y = 2z + 1$, show that $x^2 = 32^z + 4$. If $z = 1$, find the numerical values of x and y .

8. If $a^{2x-1} = b^{1-3y}$ and $a^{3x-1} = b^{2y-2}$, show that $13xy = 7x + 5y - 3$.

9. Given that $\log_5 x = 4 \log_x 5$, calculate the possible values of x .

International Prime School

Work sheet-4

Class- IX

Biology

Cha. 8: Homeostasis and excretion

- ★ We produce waste carbon dioxide when we respire. We produce waste urea when amino acids are broken down in our liver. We must balance the water and salt in our body cells do not have problems with osmosis.
- ★ Water is lost through our lungs, our skin and our kidneys.
- ★ Our kidneys filter our blood and control the amount of ions and water taken back into our blood (reabsorb).
- ★ The amount of water reabsorbed by our kidneys is controlled by a feedback system involving the hormone ADH from the pituitary gland in our brain.
- ★ Our core body temperature is controlled by the thermoregulatory centre in the brain.
- ★ If our core body temperature goes up, we lose heat through sweating and vasodilatation. The body hairs flatten but in humans this has little effect.
- ★ If our core body temperature falls, we need to make more heat. We also need to save heat to raise our body temperature. We stop sweating, vasoconstriction occur, and our body hairs are raised to trap a layer of insulating air, through this does not help much in humans. Our metabolic rate goes up and we shiver to produce heat.

Homeostasis

We need to keep the conditions in our body as constant as possible for us to survive. This is called **homeostasis**. Homeostasis is a coordinated response that needs a stimuli, a receptor and an effector.

Negative feedback is very important in keeping conditions inside your body. When levels in our body rise in response to a change in our environment, change in our body lower the levels again. When levels fall, changes in our body make them rise again.

Q/A

1. Copy and complete these sentences. Use the words below to fill in the gaps:

kidneys, lungs, amino acids, urine, waste, respiration, urea.

The chemical reactions that take place in your body to keep you alive produce _____, which would be poisonous to your body if it were not removed. Carbon dioxide produced by _____ is removed through the _____ when we breathe out. When our liver breaks down excess _____ (from proteins), _____ is formed. This is removed from the blood by the _____ and excreted as _____ from the bladder.

2. If we take in a lot of liquid, the excess water is removed by our kidneys and we produce a lot of removed by our kidneys and we produce a lot of urine. Similarly, if we take in a heavy load of mineral ions, e.g. salt, our kidneys get rid of the excess. But our kidneys are not the only way we can control our water and salt loss.

- a) In what two ways is water lost from our bodies other than in the urine?
- b) How are excess salts lost from our bodies apart from in the urine?
- c) How much glucose and protein would you expect to find in urine? Explain your answer.

1. Explain why hydrogen and oxygen atoms are more stable when they form bonds in a water molecule.
2. How do ionic bonds and covalent bonds differ?
3. Why do you think chemical bonds form?
4. Describe properties of ionic compounds.
5. The ionic compound sodium fluoride is added to toothpaste to prevent tooth decay. Describe the composition and structure of the compound.
6. What are metallic bonds?
7. Explain why metals can conduct electricity.
8. How do metallic bonds relate to the properties of metals?
9. Sodium and sodium chloride both have lattice structures. The melting points are shown in the table.

	Melting point in $^{\circ}\text{C}$	Type of Lattice structures
Sodium	93	
Sodium chloride	801	

- a) Complete the table by stating the type of lattice structure in both substances.
- b) Explain why sodium and sodium chloride have different melting points.

২। বাগধারা : নিচের শব্দগুলো খাটিক-ছোঁয়ায় বসাত।

এটা কি _____ পেয়েছি যে মাছুষি ভাই করবে ?
 সমাজ-পতিরা _____ হয়ে গরিবের সর্বনাশ
 করে। জীবনের _____ খেটে গেলাম, লাভ-
 কিছুই হলনা। সমাজে _____ দেব চেনা সহজ নয়।
 আমাকে ফেনে খাওয়ায় আমার হোজগোর হলো
 হাজার টাকা - একেই বলে _____। দানি-জিনিষপত্র
 সব সাবধানে রেখ, ছেলেটার _____ এড্রাস আছে।
 এই _____ লোকটিকে দেখে কি মনে হয় যে, ইনি
 কপর্দক জুঁয় ?

১. মেঘাফা দুরন্দ ২. হাতচেন ৩. মগের মুগ্ধক
 ৪. বাঘব ঘোষান ৫. দুতের বেগার ৬. ডিজে বেজান
 ৭. জাপেন-ধর ৮. হাবল পানি পাওয়া

২। বচন লিখ : (নিজের ভাষায়) (৩৫০ শব্দে)

- ক. পরিবেশ দূষণ ও তার প্রতিকার
 খ. নিরক্ষরতা মুক্ত বাংলাদেশ