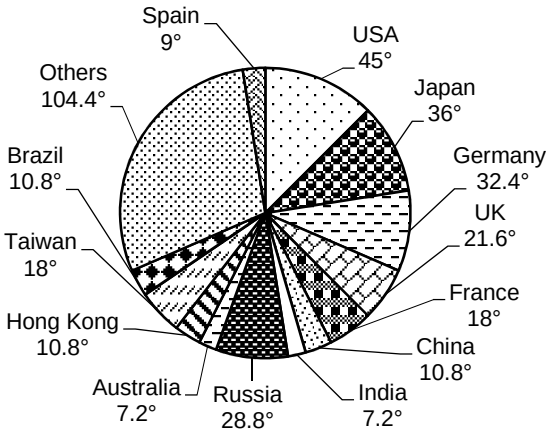
CHAPTER – 3
PIE CHARTS

Worked out Examples:

These questions are based on the following pie chart given below.



Total Global Exports = $72,000 billion

3.01: By how much does the value of the exports of USA exceed that of Germany?
(A) $2300 billion
(B) $2520 billion
(C) $3516 billion
(D) $2860 billion

Sol: The difference in the angles subtended by USA and Germany = 45°– 32.4°= 12.6°
∴ Difference in the exports of USA and Germany
(in $ billion) = $72{,}000 \times \frac{12.6^\circ}{360^\circ}$ = $2520 billion.
Choice (B)

3.02: The difference in the value of the exports of Japan and France is how many times that of UK and Taiwan?
(A) 2 times
(B) 3 times
(C) 5 times
(D) 12 times

Sol: The difference in the angles subtended by Japan and France = 36°– 18°= 18° → (A)
The difference in the angles subtended by UK and Taiwan = 21.6°– 18°= 3.6° → (B)
(A) is 5 times (B) Choice (C)

3.03: The value of the exports of the OPEC countries is how much more than the value of the exports of India and Australia put together, given that OPEC has a 20% share in the value of the exports of 'Others'?
(A) $1296 billion
(B) $1298 billion
(C) $1305 billion
(D) None of these

Sol: Value of the exports of India & Australia
= 7.2°+ 7.2°= 14.4° → (A)
Value of exports OPEC countries = $104.4^\circ \times \frac{20}{100}$
= 20.88° → (B)
20.88°– 14.4°= 6.48°is the difference.
In terms of value, difference is
$72000 \times \frac{6.48^\circ}{360^\circ}$ = $1296 billion Choice (A)

3.04: Considering 'others' as a single country, what is the number of countries, whose exports are more than the average exports per country?
(A) 3
(B) 4
(C) 5
(D) None of these

Sol: The total number of countries = 14
⇒ Average angle subtended by each country = 360∕14 ≅ 25.7°
Only U.S.A, Japan, Germany, Russia and Others are greater than 25.7 Choice (C)

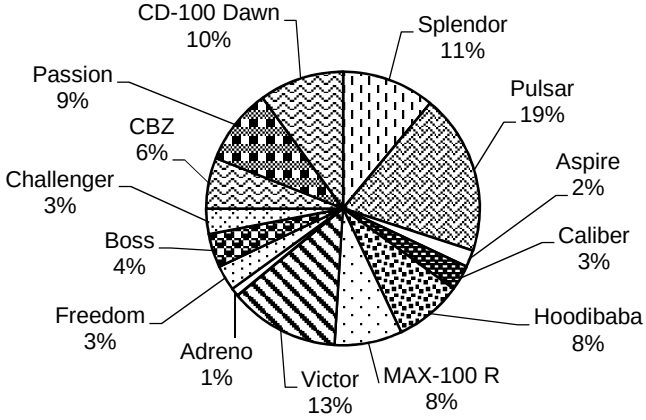
3.05: If exports of developing countries accounted for 36% of the total worldwide exports, then what is the value of the exports of Japan as a percentage of the exports of the developing countries?
(A) 25.01%
(B) 26.23%
(C) 27.77%
(D) 29.87%

Sol: Exports of developing countries = 36% of total imports
Exports of Japan = 10% of total exports
Ratio = $\frac{10}{36}$ = 0.2777 : 27.77%
Choice (C)

Exercise – 3(a)

Directions for questions 1 to 5: These questions are based on the pie chart given below.

Brand wise spilt up of sales of Motorcycles in India in 2003



Total number of motorcycles sold in India in 2003 = 92,00,000

Company owning the brand – Bajaj (Pulsar, Aspire Caliber, Hoodibaba) TVS (Max –100R, Victor) kinetic (Freedom, Adreno) LML (Challenger, Boss) and Hero Honda the rest.

1. The most selling brand oversold the least selling brand by how many motorcycles?
(A) 17.48 lakhs (B) 16.56 lakhs
(C) 3.68 lakhs (D) 18.79 lakhs

2. Which company(s) sold a total of 33 lakh motorcycles (approximately) in 2003?
(A) TVS (B) Bajaj
(C) Hero Honda (D) Kinetic & LML together

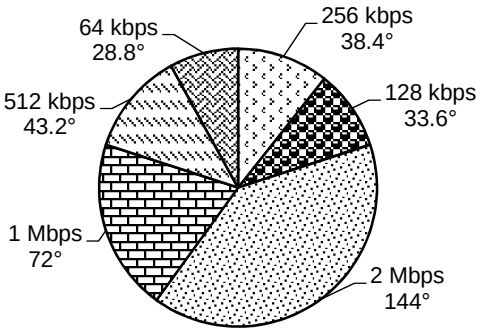
3. If Bajaj makes a profit of ₹6000 for every Pulsar sold and Hero Honda makes a profit of ₹10,500 for every CD-100 Dawn sold, then find the difference in the total amounts of profit made by Bajaj and Hero Honda from the sales of Pulsar and CD-100 Dawn respectively, in 2003.
(A) ₹14,784 lakhs (B) ₹10,408 lakhs
(C) ₹96,600 lakhs (D) ₹8,280 lakhs

4. By approximately what percentage do the number of motorcycles sold by Bajaj and TVS put together exceed that of the remaining three companies put together?
(A) 18% (B) 8%
(C) 13% (D) None of these

5. If sales of the motor cycles of Bajaj, Hero Honda and TVS are projected to grow at the rate of 20% each from 2003 to 2004 and that of LML and Kinetic at the rate of 50%, each then approximately what is the overall growth rate of the total number of motorcycles sold in 2004 over that of 2003? Assume that these are the only companies selling motorcycles in India?
(A) 18% (B) 20%
(C) 23% (D) 26%

Directions for questions 6 to 10: These questions are based on the pie chart given below.

Share of Revenue obtained from each type (by capacity) of connection sold by VSNL out of total revenue of VSNL from sales of connections (For the year 2001)



Total revenue from sale of connections by VSNL in 2001 = ₹15 lacs.
Total number of connections = 10000

6. If VSNL's revenues from sales of 1 Mbps - connection in 2000 was ₹2,20,000, then what is the percentage increase in the same from 2000 to 2001?
(A) 36.36% (B) 33.33% (C) 28.56% (D) 23.21%

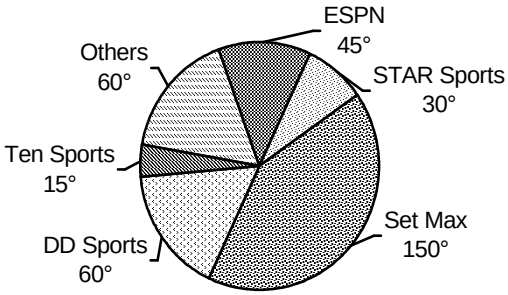
7. In 2001, GE Capital decided to purchase fifty 1 Mbps connections and hundred 512 kbps connections from VSNL, which gives a bulk discount of 12.5% on any total purchase exceeding ₹10,000 in value, then what is the amount that GE capital pays for these connections given that 1 Mbps connections form 25% and 512 kbps connections form 20% of the total number of connections?
(A) ₹13,125 (B) ₹12,260
(C) ₹14,000 (D) None of these

8. VSNL's revenue from 2 Mbps connection is what percentage of the revenue from 512 Kbps connections in 2000, given that the revenue from 2 Mbps connections has increased by 25% and that of 512 Kbps by 20% from 2000 to 2001?
(A) 220% (B) 320%
(C) 420% (D) 347%

9. What is the approximate ratio of the revenues from 256 Kbps connection to that of a 128 Kbps connection, in 2001?
(A) 1.07 (B) 1.38 (C) 1.26 (D) 1.14

10. If the revenue from 2 Mbps connections increases by ₹2 lakhs from 2001 to 2002 then what is the approximate angle subtended by 2 Mbps connections in the pie-chart drawn for the year 2002. Given that the revenue from all other types of connections remains the same from 2001 to 2002?
(A) 170° (B) 163° (C) 154° (D) 145°

Directions for questions 11 to 15: These questions are based on the following pie chart which shows the viewership of different sports channels in the month of February, 2003 in India. There are no overlaps in viewership of channels.



Directions for questions 11 to 15: Type in your answer in the input box provided below the question.

11. If 60,000 people watched STAR sports on an average per day in February 2003, then how many more people watched Set Max than Ten Sports on an average per day for the same period?

12. During the given period for how many sports channels is the viewership is more than 20% of the total viewership?

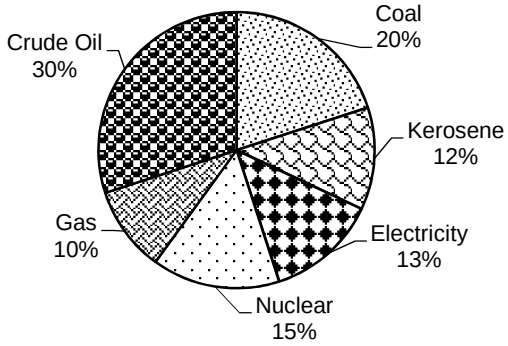
13. If the viewership of DD sports for the first half of February is half that of the second half of February, then what is the ratio of viewership of DD sports for the second half to that of ESPN for the whole month?

14. By mistake the viewership of DD sports has been underquoted by 20%. If this mistake is corrected then what is the correct share of viewership of Set Max?

15. If the viewership of ESPN on an average was 90,000 per day, then what was the viewership for all the sports channels on an average per day?

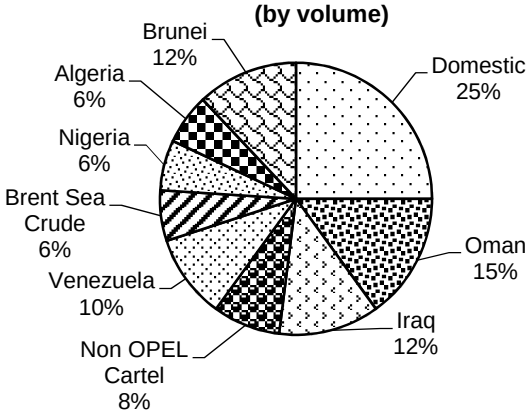
Directions for questions 16 to 20: These questions are based on the pie-charts given below.

Break-up of various Energy sources consumed by India (by value)



Total value = ₹60,000 crores

Break-up of Crude Oil Supply in India (by volume)



Total = 250 million barrels

16. What is the value of 1 litre of Kerosene given that the total Kerosene consumed in India is 150 lakh kilolitres?
(A) ₹3.2 (B) ₹4.8
(C) ₹6.8 (D) Data Inadequate

17. If 1000 kilowatts {= 1 gigawatt (1GW)} of electricity costs ₹25 lakhs, then what is the total amount of electricity produced in India?
(A) 31,200 GW (B) 25,000 GW
(C) 21,750 GW (D) Data inadequate

18. What is the domestic crude oil price per barrel in Oman given that Oman sells crude oil to India at a discount of 20% on its domestic price? (Assume that the price of crude oil to India from all the sources is the same)
(A) ₹900 (B) ₹750
(C) ₹720 (D) Data inadequate

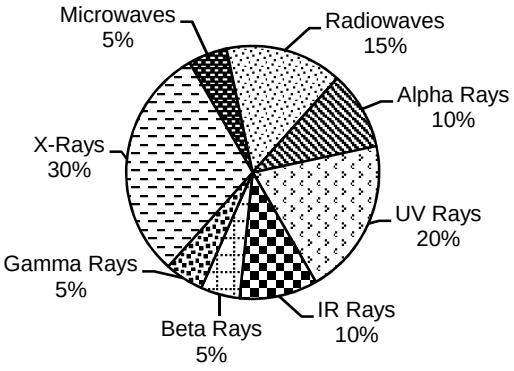
19. If the Total Estimated Reserves (TER) of crude oil in India is 4000% more than the Total Recoverable Reserves (TRR) and the current domestic production of crude oil is 16% of the TRR then what is the approximate TER of crude oil in India? (in million barrels)
(A) 11,500 (B) 13,700
(C) 15,000 (D) 16,000

20. The current domestic price of crude oil is 25% less than the price of crude oil from all other sources (as shown in the pie chart), then what is the price of crude oil imported from Venezuela?(Assuming that prices of crude oil from all sources other than domestic are equal)
(A) ₹617 per barrel (B) ₹768 per barrel
(C) ₹917 per barrel (D) Data inadequate

Exercise – 3(b)

Directions for questions 1 to 5: These questions are based on the pie chart given below.

Constituents of Sunrays received in 1 minute



Total sunrays received in 1 minute = 3600 units

Directions for questions 1 to 5: Type in your answer in the input box provided below the question.

1. If the human body can withstand a maximum of 9720 units of IR rays, when exposed to the sun continuously, then what is the maximum time (in minutes) that any person could stand in the sun without crossing the threshold limit of IR rays?

2. The amount of Beta rays in 10 minutes of sunrays is how many times the amount of IR rays in 3 minutes of sunrays?

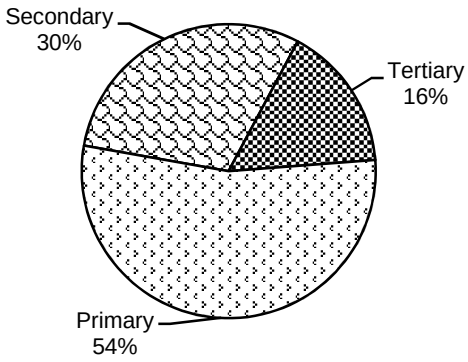
3. How many minutes of exposure to the sun in a day would be enough to ensure that the body receives enough amount of Vitamin D, given that the body requires 40 units of Vitamin D every day and that 30 units of Beta rays generate in 1 unit of Vitamin D?

4. The amount of Alpha rays received in 2 minutes is how much more/less than the amount of radio waves received in 4 minutes?

5. If presently the ozone layer in the atmosphere reflects away 60% of the sun's rays then what would the amount of gamma rays received in one minute be, if the ozone layer were to completely disappear?

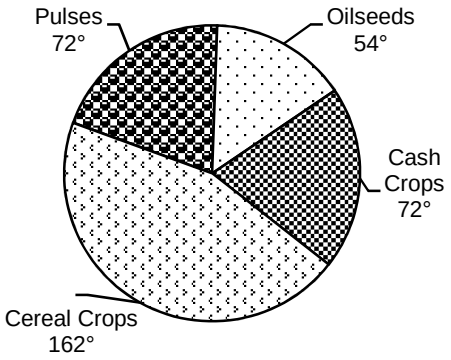
Directions for questions 6 to 10: These questions are based on the pie charts given below.

Share of various sectors in the GDP of India (1970-1971)

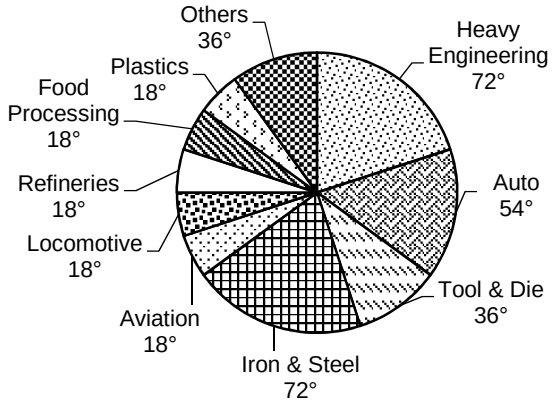


Total GDP = ₹3,20,000 Crores

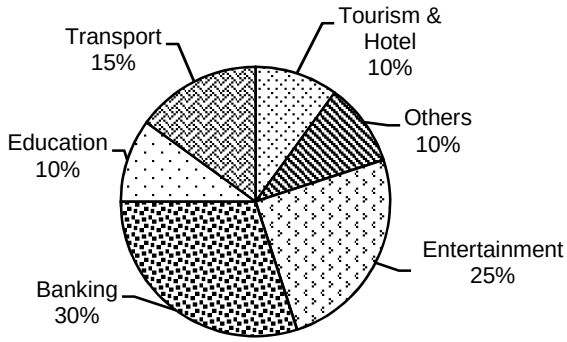
Composition of Primary Sector (1970-1971)



Composition of the Secondary Sector (1970-1971)



Composition of the Tertiary Sector (1970-1971)



6. If 20% of the value of the cash crop output in India during 1970-1971 was that of Jute, then what is the value of the output of Jute in that year? (in ₹crores)
(A) 8,400 (B) 10,400
(C) 6,912 (D) Data inadequate

7. What percentage of the GDP is contributed by the Banking Sector?
(A) 3.2% (B) 4.8%
(C) 30% (D) None of these

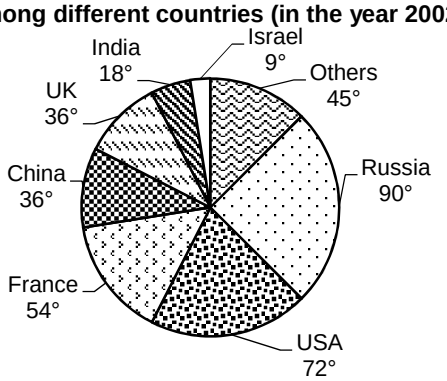
8. The difference in the values of the Entertainment and Transport sectors is what percentage of the difference in the values of the Iron & Steel and Tools and Die Sectors?
(A) 15% (B) 25% (C) 45% (D) 53.33%

9. What is the approximate value of the output of Export Quality Basmati rice, given that the value of the output of rice is 40% of that of Cereal crops and the value of the output of Export Quality Basmati rice is 15% of that of rice? (in ₹crores)
(A) 4,600 (B) 4,150 (C) 36,750 (D) 3,120

10. From 1970-1971 to 1980-1981 all the components of the Secondary sector doubled in value and all the components of the Tertiary sector tripled in value while the Primary sector had no change in value. What would be the value of the Primary Sector in 1980-1981 given that the total GDP is valued at 'X' crores in that year?
(A) 0.33 X (B) 0.45 X
(C) 0.54 X (D) 0.60 X

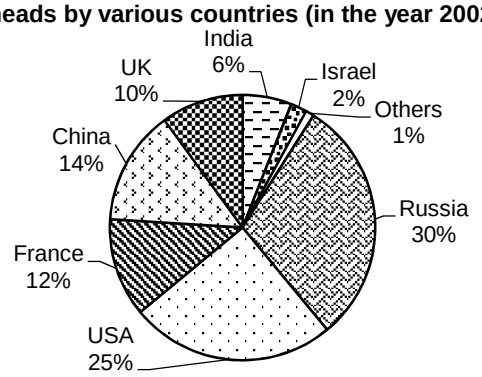
Directions for questions 11 to 15: These questions are based on the pie-charts given below.

Distribution of Nuclear Warheads produced among different countries (in the year 2002)



Total number of Warheads produced = 80,000

Cost incurred in building and maintaining Nuclear Warheads by various countries (in the year 2002)



Total cost incurred = $2500 million

Note: Assume that all the countries had no warheads at the end of the year 2001.

11. What is the ratio of the difference in the number of warheads possessed by Russia and USA and the difference in the number of warheads possessed by India and Israel?
(A) 1 (B) 1.5
(C) 2 (D) 2.5

12. What is the average cost of building and maintaining one nuclear warhead by China in 2002?
(A) $437.50 (B) $43,750
(C) $4375 (D) None of these

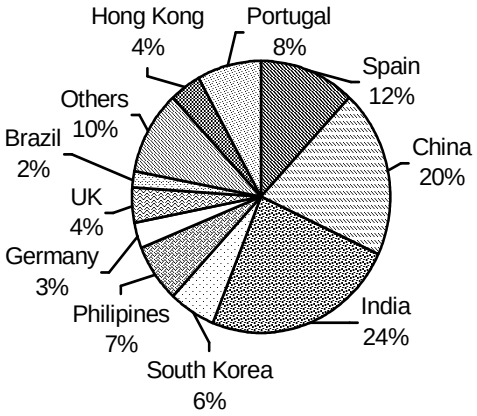
13. What is the difference in the average expenditure incurred in building and maintaining one warhead by Russia and that of USA?
(A) $1500
(B) $1562.50
(C) $1671.40
(D) None of these

14. If each warhead of the countries from the category 'Others' weighs 1000 kg, which is half that the weight of the other countries given in the graph, then what is the weight of all the nuclear warheads of all countries put together?
(A) 30,0000 tonnes (B) 45,000 tonnes
(C) 1,40,000 tonnes (D) 1,50,000 tonnes

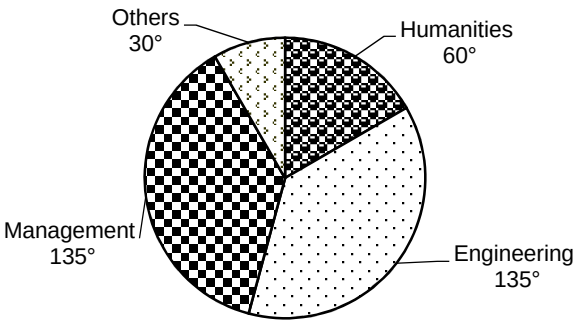
15. If after signing the Nuclear Non-proliferation Treaty (NPT), Russia reduces the number of nuclear warheads with it by 40%, USA by 30%, UK and China by 20% each and all other countries by 10%, then what will be the total number of nuclear warheads in the world after this reduction?
(A) 61,200 (B) 64,000
(C) 72,800 (D) None of these

Directions for questions 16 to 20: These questions are based on the pie-charts which give statistics of International students pursuing post graduation in the United States in the year 2000.

Distribution by nationality



Distribution by graduation



Total number of International students pursuing post graduation in US in the given year is 80,000.

16. What percentage do students from India and China form of the students from all the other countries (excluding others) given in the pie chart?
(A) 96.78% (B) 95.12% (C) 95.65% (D) 92.01%

17. How many students from the country which has the maximum representation in the year 2000 are pursuing a management course? (assuming that the nationwise distribution of the students of each graduation stream is as per the graph of distribution by nationality)
(A) 7200 (B) 9000
(C) 19200 (D) Cannot be determined

18. If the number of students pursuing post graduation in USA in the year 2000 from Spain and Portugal is 25% of the number of domestic students pursuing MS in USA, then what is the total number of domestic students pursuing MS in USA?
(A) 16000 (B) 36000
(C) 60000 (D) None of these

19. If it is known that a total of 3,60,000 students are pursuing post graduation in USA in 2000, then approximately what percentage of it is composed of students from Asian countries, (i.e., China, India, South Korea, Philippines and Hong Kong)?
(A) 16.5% (B) 13.5%
(C) 19% (D) Cannot be determined

20. What is the number of Indian students pursuing either Engineering or Management as a percentage of the number of Chinese students pursuing any course other than engineering and management in USA in the year 2000? (use data given in question 17)
(A) 120% (B) 220%
(C) 360% (D) 440%

Key

Exercise – 3(a)

1. B	5. C	9. D	13. 8 : 9	17. D
2. C	6. A	10. A	14. 40	18. A
3. D	7. A	11. 2,70,000	15. 7,20,000	19. D
4. C	8. B	12. 1	16. B	20. B

Exercise – 3(b)

1. 27	5. 450	9. A	13. B	17. A
2. 1.66	6. C	10. A	14. D	18. D
3. 6.67	7. B	11. C	15. A	19. B
4. 1440	8. D	12. B	16. C	20. C