Sample Paper - 2

GENERAL INSTRUCTIONS

All questions are compulsory.
The question paper consist of 30 questions divided into four sections A, B, C and D. Section A comprises of 6 questions of 1 mark each. Section B comprises of 6 questions of 2 marks each, Section C comprises of 10 questions of 3 marks each and Section D comprises of 8 questions of 4 marks each.
There is no overall choice.
Use of calculator is not allowed.

SECTION-A

(1 mark each)

1. What will be perimeter of a regular pentagon of side 3 cm?

2. Simplify : $(ab-c)^2+2abc$

3. Show that 500 is not a perfect square.

4. Factorise: $lx+my+mx+ly$

5. Express each of the following in standard form :
(a) The mass of a proton in gram is

$$\frac{1673}{1000000000000000000000000000}$$

(b) A Helium atom has a diameter of 0.000000022 cm.

6. If the division $N\div 5$ leaves a remainder of 4, what might be the one's digit of N? Suppose that the division $N\div 5$ leaves a remainder of 4 and the division $N\div 2$ leaves a remainder of 1. What must be the one's digit of N?

SECTION-B

(2 marks each)

7. Find the volume of a cube whose surface area is 150 m^2.

8. The population of a place increased to 54,000 in 2003 at a rate of 5% per annum
(a) Find the population in 2001.
(b) What would be its population in 2005?

9. Find the multiplicative inverse of the following:

(a) -13 (b) $\frac{-13}{19}$

(c) $\frac{1}{5}$ (d) $\frac{-5}{8}\times\frac{-3}{7}$

10. If $x-\frac{1}{x}=7$, then find the value $x^2+\frac{1}{x^2}$.

11. Simplify:

(a) $-pcr\left(p^2+q^2+r^2\right)$

(b) $(px+qy)(ax-by)$

12. The area of a rectangular field is 48 m2 and one of its sides is 6 m. How long will a lady take to cross the field diagonally at the rate of 20 m/minute?

SECTION-C

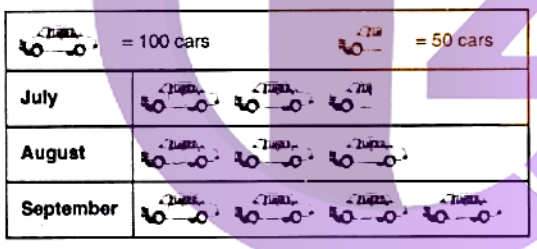
13. Solve for $x: \frac{(2+x)(7-x)}{(5-x)(4+x)}=1$

14. (a) Construct a quadrilateral BLUE in which BL = 5.3 cm, BE = 2.9 cm, $\angle B=70°$, $\angle L=95°$ and $\angle U=85°$.

(b) A student attempted to draw a quadrilateral PLAY, where PL = 3 cm, LA = 4 cm, AY = 4.5 cm, PY = 2 cm, LY = 6 cm, but could not draw it. What is the reason?

15. (a) In a lottery, there are 10 prizes and 20 blanks. A ticket is chosen at random, what is the probability of getting a prize?

(b) Study the following pictograph and answer the questions given below it.



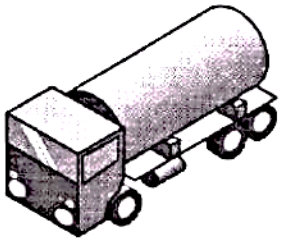
(i) How many cars were produced in the month of July?

(ii) In which month were maximum number of cars produced?

16. A car takes 2 hours to reach a destination by travelling at the speed of 60 km/h. How long will it take when the car travels at the speed of 80 km/h ?

17. (a) $(-9)^3 \div (-9)^8$ (b) $\frac{3^{-5}\times 10^{-5}\times 125}{5^{-7}\times 6^{-5}}$

18. A milk tank is in the form of cylinder whose radius is 1.5 m and length is 7 m. find the quantity of milk in litres that can be stored in the tank?



19. The ratio of radii of two cylinders 1: 2 and heights are in ratio 2: 3. The ratio of their volumes is?

20. Factorise

(a) $x^2+xy+8x+8y$

(b) $15xy-6x+5y-2$

(c) $ax+bx-ay-by$

21. Three numbers in the ratio 2:3: 4. The sum of their cubes is 0.334125. Find the numbers.

22. Find the following square by using the identities

(a) $(b-7)^2$ (b) $(xy+3z)^2$

(c) $(6x^2-5y)^2$ (d) $\left(\frac{2}{3}m+\frac{3}{2}n\right)^2$

(e) $(0.4p-0.5q)^2$ (f) $(2xy+5y)^2$

SECTION-D

(4 marks each)

23. (a) Water is poured into a cuboidal reservoir at the rate of 60 litres per minute. If the volume of reservoir is 108 m^3, find the number of hours it will take to fill the reservoir.

(b) If the radius and height of the cylindrical tank are 7 m and 10 m, find the capacity of the tank.

24. In a hypothetical sample of 20 people, the amount of money (in thousands of rupees) with each was found to be as follows :

114,108,100,98,101,109,117,119,126,131,136,143,156,169,182,195, 207, 219,235,118.

Draw a histogram of the frequency distribution, taking one of the class interval as 50 – 100.

25. Find using distributivity.

(a) $\left\{\frac{7}{5}\times\left(\frac{-3}{12}\right)\right\}+\left\{\frac{7}{5}\times\frac{5}{12}\right\}$

(b) $\left\{\frac{9}{16}\times\frac{4}{12}\right\}+\left\{\frac{9}{16}\times\frac{-3}{9}\right\}$

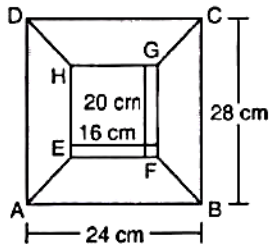
26. Hasan buys two kinds of cloth materials for school uniforms, shirt material that costs him Rs. 50 per metre and trouser material that costs him Rs. 90 per metre. For every 3 metres of the shirt material he buys 2 metres of the trouser material. He sells the materials at 12% and 10%, respectively. His total sale is Rs. 36,600. How much trouser material did he buy?

27. Using identities evaluate :

(a) 71^2 (b) 99^2 (c) 102^2 (d) 998^2 (e) 5.2^2

(f) 297×303 (g) 78×82 (h) 8.9^2

28. Diagram of the adjacent picture frame has outer dimensions = 24 cm × 28 cm and inner dimensions 16 cm × 20 cm. Find the area of each section of the frame, if the width of each section is same.

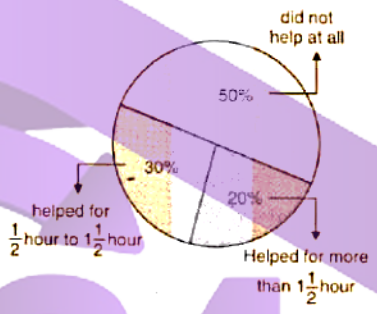


29. In a primary school, the parents were asked about the number of hours they spend per day in helping their children to do homework. There were 90 parents who help for $\frac{1}{2}$ hr to $1\frac{1}{2}$ hr. The distribution of parents according to the time for which, they said they helped is given in the adjoining figure, 20% helped for more than 1-hr per day. 30% helped for $1\frac{1}{2}$ hr to $1\frac{1}{2}$ hr; 50% did not help at all Using this, answer the following :

(a) How many parents were surveyed?

(b) How many said that did not help?

(c) How many said that they helped for more than $1\frac{1}{2}$ hours?



30. A 5 m 60 cm high vertical pole casts a shadow 3 m 20 cm long. Find at the same time (a) the length of the shadow cast by another pole 10 m 50 m cm high (b) the height of a pole which cast shadow 5 m long.

Solutions

Section 'A'

(1 marks each)

1. Perimeter of a regular pentagon $= 5 \times$ side

$= 5 \times 3\ cm$

$= 15$ cm **1**

2. $(ab-c)^2+2abc$

$\Rightarrow (ab)^2-2(ab)(c)+(c)^2+2abc$ ½

$\Rightarrow a^2b^2-2abc+c^2+2abc$

$\Rightarrow a^2b^2+c^2$ ½

3. Prime factorisation of 500 is

2	500
2	250
5	125
5	25
5	5
	1

$500 = 2\times2\times5\times5\times5$ ½

The prime factor 5 does not occur in pair. Therefore, 500 is not a perfect square. ½

4. $lx+ny+mx+ly \;=\; lx+mx+ny+ly$

$= x(l+m)+y(l+m)$ ½

$= (l+m)\,(x+y)$ ½

5. **(a)**

$$\frac{1673}{10000000000000000000000000000}$$

$$= \frac{1.673\times10^3}{10^{27}}$$

$= 1.673 \times 10^{-24}$ gm ½

(b) $0.000000022 = 2.2\times10^{-8}$ cm ½

6. If remainder $= 4$, then the one's digit of 'N' must be either 4 or 9.

For $N \div 5$, remainder $= 4$ ½

$\therefore$ One's digit can be 4 or 9. ...(i)

Again, for $N \div 2$, remainder $= 1$

$\therefore$ N must be an odd number.

So, one's digit of N must be 1, 3, 5, 7 or 9. ...(ii)

From (i) and (ii), the one's digit of N must be 9. ½

Section 'B'

(2 marks each)

7. Since, surface area of cube $= 150\ m^2$
Let the length of each edge $= a$
Then, surface area of cube $= 6a^2$ **1**
According to problem,
$6a^2 = 150$
or $a^2 = \frac{150}{6} = 25$ ½
or $a^2 = 25$
$\Rightarrow a = \sqrt{25} = \sqrt{5 \times 5}$
$\Rightarrow a = 5\ m$
We know that,
Volume of cube $= a^3$ cubic metre
Therefore,
Volume of cube $= 5^3$
$= 5 \times 5 \times 5$
$= 125\ m^3$ ½

8. **(a)** Here $A = 54000$, $R = 5\%$, $n = 2$ year,
$\therefore$ $P = ?$

$$A = P\left(1+\frac{R}{100}\right)^n$$

$$54000 = P\left(1+\frac{5}{100}\right)^2$$

$$= P\left(\frac{21}{20}\right)^2$$

$$\Rightarrow \quad P = \frac{54000 \times 20 \times 20}{21 \times 21}$$

$= 48980$ (approx.) **1**
$\therefore$ Population in 2001 was 48980.
(b) Here, $P = 54000$, $R = 5\%$ p.a., $n = 2$ years

$$A = P\left(1+\frac{R}{100}\right)^n$$

$$= 54000\left(1+\frac{5}{100}\right)^2$$

$$= 54000 \times \frac{21}{20} \times \frac{21}{20}$$

$= 59535$

Hence, population in 2005 would be 59535.

9. We know that the multiplicative inverse of a rational number a is $\left(\frac{1}{a}\right)$, such that $a \times \frac{1}{a} = 1$

(a) The multiplicative inverse of – 13 is $-\frac{1}{13}$.

½

(b) The multiplicative inverse of $\frac{-13}{19}$ is $-\frac{19}{13}$. ½

(c) The multiplicative inverse of $\frac{1}{5}$ is 5.

½

(d) The multiplicative inverse of

$\frac{-5}{8} \times \frac{-3}{7} = \frac{15}{56} is \frac{56}{15}$. ½

10. We know that $(a-b)^2 = a^2 - 2ab + b^2$

$\therefore \quad \left(x - \frac{1}{x}\right)^2 = (x)^2 - 2(x)\left(\frac{1}{x}\right) + \left(\frac{1}{x}\right)^2$ **1**

$\left(x - \frac{1}{x}\right)^2 = x^2 - 2 + \frac{1}{x^2}$

$(7)^2 = x^2 - 2 + \frac{1}{x^2}$

$49 + 2 = x^2 + \frac{1}{x^2}$

$x^2 + \frac{1}{x^2} = 51$ **1**

11. **(a)** $-pqr(p^2 + q^2 + r^2)$

$= -(pqr) \times p^2 - (pqr) \times q^2 - (pqr) \times r^2$

$= -p^3qr - pq^3r - pqr^3$ **1**

(b) $(px + qy)\ (ax - by)$

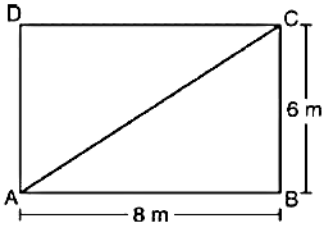
$= px(ax - by) + qy(ax - by)$

$= apx^2 - pbxy + aqxy - qby^2$ **1**

12. Area of rectangular field = $48\ m^2$

One side = 6 m

Other side $= \frac{48}{6} = 8$ m. ½



Diagonal of rectangle $= \sqrt{8^2+6^2}$

$= \sqrt{64+36}$

$= 10$ m

1

Lady covers 20 m in 1 minute

Lady will cover 10 m in $\frac{1}{2}$ min. or 30 sec. **½**

Section 'C'

(3 marks each)

13. We have, $\frac{(2+x)(7-x)}{(5-x)(4+x)} = 1$

By cross-multiplication, we get

$(2+x)(7-x) = (5-x)(4+x)$

or, $2(7-x)+x(7-x) = 5(4+x)-x(4+x)$ **1**

or, $14-2x+7x-x^2 = 20+5x-4x-x^2$

or, $14+5x = 20+x$

or, $5x-x = 20-14$ **1**

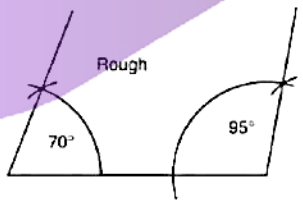
or, $4x = 6$

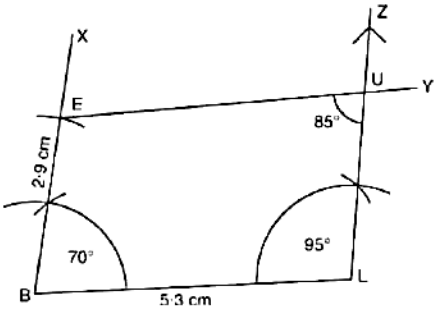
or, $x = \frac{6}{4} = \frac{3}{2}$

Thus, the solution of the given equation is $x = \frac{3}{2}$ **1**

14. **(a)** **(i)** Draw $BL = 5.3$ cm.

(ii) Draw $\angle B = 70°$ with the help of rough figure.





(iii) Making $\angle BLU = 95°$ with the help of rough figure, since

$\angle B+\angle L+\angle U+\angle E = 360°$

or $70°+95°+85°+\angle E = 360°$

or $250° + \angle E = 360°$

or $\angle E = 360° - 250°$

$\angle E = 110°$ **2**

(iv) Making $\angle BEY = 110°$ intersecting EY and LZ at U.

(v) Join EU and LU, then $BLUE$ is a required quadrilateral.

(b) No, we can't draw it, because $PL + PY < LY$. actually the sum of the lengths of any two sides of a triangle must always be greater than the length of the third side.

1

15. **(a)** Since, total no. of outcomes = 10 + 20 = 30

$\because$ Probability of an event,

$$P(E) = \frac{Favourable\ outcomes}{Total\ number\ of\ outcomes}$$

Then, P (getting a prize) $= = \frac{10}{30} = \frac{1}{3}$ **1**

(a) 250 cars were produced in the month of July. **1**

(b) Maximum number (= 400) of cars were produced in the month of September.

1

16. Let car takes x hours. **1**

Time (in hours)	2	x
Speed (in km/h)	60	80

If the speed of car increases, then the time taken to reach a destination will decrease. Hence, it is a case of inverse proportion.

So, $x \times 80 = 2 \times 60$

$\Rightarrow \quad x = \frac{2 \times 60}{80} = \frac{3}{2}$

$= 1\frac{1}{2}$

Thus A car takes $= 1\frac{1}{2}$ hours to reach the destination. **2**

17. **(a)** $(-9)^3 . (-9)^8 = (-9)^8$

$= \frac{(-9)^3}{(-9)^8}$

$= (-9)^{3-8}$

$= (-9)^{-5}$

$= \frac{1}{(-9)^5}$ **1½**

(b) $\frac{3^{-5} \times 10^{-3} \times 125}{5^{-7} \times 6^{-5}} = \frac{5^7 \times 6^5 \times (5 \times 5 \times 5)}{3^5 \times 10^5}$

$$= \frac{5^7 \times (2\times 3)^5 \times 5^3}{3^5 \times (2\times 5)^5}$$

$$= \frac{5^7 \times 2^5 \times 3^5 \times 5^3}{3^5 \times 2^5 \times 5^5}$$

$$= (5^7 \times 5^3 \times 5^{-5}) \times (2^5 \times 2^{-5}) \times (3^5 \times 3^{-5})$$

$$= 5^{7+3-5} \times 2^{5-5} \times 3^{5-5}$$

$$= 5^{10-5} \times 2^0 \times 3^0$$

$$= 5^5$$ **1½**

18. Radius of cylinder tank = 1.5 m

Length of cylindrical tank = 7 m

The volume of cylindrical tank $= \pi r^2 h$

$$= \frac{22}{7} \times (1.5)^2 \times 7$$

$= 49.5\ m^3$ **2**

$1\ m^3 = 1000\ L$

$49.5\ m^3 = 49500\ L$ **1**

19. Let r_1 and r_2 are radii of two cylinders

$$\frac{r_1}{r_2} = \frac{1}{2}$$ **1**

Let h_1 and h_2 are heights of two cylinder

$$\frac{h_1}{h_2} = \frac{2}{3}$$ **1**

Let V_1 and V_2 columns of two cylinders

$$\therefore \quad \frac{V_1}{V_2} = \frac{\pi r^2_1 h_1}{\pi^2_2 h_2}$$

$$= \frac{1}{4} \times \frac{2}{3}$$

$$\frac{V_1}{V_2} = \frac{1}{6}$$ **1**

20. **(a)** $x^2 + xy + 8x \mid + 8y = x \times x + x \times y + 8 \times x + 8 \times y$

$= x(x+y) + 8\ (x+y)$

$= (x+y)\ (x+8)$ **1**

(b) $15xy\ 6x + 5y - 2 = 3 \times 5 \times x \times y - 2 \times 3$

$\times x + 5 \times 1 \times y - 2 \times 1$

$= 3 \times x(5 \times y - 2) + 1\ (5 \times y - 2)$

$= 3x(5y-2) + 1\ (5y-2)$

$= (5y-2)\ (3x+1)$ **1**

(c) $ax + bx - ay - by = a \times x + b \times x - a \times y - b \times y$

$= x(a+b)\ - y(a+b)$

$= (a+b)\ (x-y)$ **1**

21. Let the number be 2x, 3x and 4x, then

$(2x)^3 + (3x)^3 + (4x)^3 = 0.334125$ **1**

$8x^3 + 27x^3 + 64x^3 = 0.334125$

$99x^3 = 0.334125$

$x^3 = \frac{0.334125}{99}$

$x^3 = 0.003375$ **1**

$x^3 = \frac{3375}{1000000}$

$x = \sqrt[3]{\frac{3375}{1000000}}$

$= \frac{15}{100}$

$= 0.15$

Hence, the number are 0.3, 0.45 and 0.6. **1**

22. **(a)** $(b-7)^2$

Use the identity,

$(a-b)^2 = a^2 - 2ab + b^2$

$= b^2 - 2(b)(7) + (7)^2$ **½**

$= b^2 - 14b + 49$

(b) $(xy+3z)^2$

Use the identity,

$(a+b)^2 = a^2 + 2ab + b^2 = (xy)^2 + 2(xy)(3z) + (3z)^2$

$= x^2y^2 + 6xyz + 9z^2$ **½**

(c) $(6x^2 - 5y)^2 = (6x)^2 - 2(6x)(5y) + (5y)^2$

Use the identity,

$(a-b)^2 = a^2 - 2ab + b^2$

$= 36x^4 - 12x \times 5y + 25y^2$

$= 36x^4 - 60x^2y + 25y^2$ **½**

(d) $\left(\frac{2}{3}m + \frac{3}{2}n\right)^2$

Use the identity,

$(a+b)^2 = a^2 + 2ab + b^2$

$= \left(\frac{2}{3}m\right)^2 + 2\left(\frac{2}{3}m\right)\left(\frac{3}{2}n\right) + \left(\frac{3}{2}n\right)^2$

$= \frac{4}{9}m^2 + \frac{4}{3}m\left(\frac{3}{2}n\right) + \left(\frac{9}{4}n\right)^2$

$= \frac{4}{9}m^2 + 2mn + \frac{9}{4}n^2$ **½**

(e) $(0.4p-0.5q)^2$

Use the identity,

$(a-b)^2 = a^2 - 2ab + b^2$

$= (0.4p)^2 - 2\ (0.4)(0.5)\ (p \times q) + (0.5q)^2$

$= 0.16p^2 - \ (0.8)(0.5)\,pq + 0.25q^2$

$= 0.16p^2 - 0.40pq + 0.25q^2$ ½

(f) $(2xy+5y)^2$

Use the identity,

$(a+b)^2 = a^2 + 2ab + b^2$

$= (2xy)^2 + \ 2(2xy)\ (5y) + (5y)^2$

$= \ 4x^2y^2 + 4xy \times 5y + 25y^2$

$= \ 4x^2y^2 + \ 20xy^2 + 25y^2$ ½

Section 'D'

(4 marks each)

23. **(a)** ∵ Volume of the reservoir $= 108\ m^3$

$1\ m^3 = 1000$ litres

∴ Capacity of the reservoir $= 108 \times 1000$ litres

$= 108000$ litres

1

Amount of water poured in 1 minute = 60 litres

∴ Amount of water to be poured in 1 hour

$= 60 \times 60$ litres **1**

Thus, number of hours required to fill the reservoir

$= \frac{108000}{60 \times 60} = 30$

∴ The required number of hours = 30

1

(b) Let the radius of cylindrical tank (r) = 7 cm and height (h) = 10 m

Then, the capacity of the tank *i.e.*,

Volume of the tank $= \pi r^2 h$

$= \frac{22}{7} \times 7^2 \times 10$

$= \frac{22}{7} \times 7 \times 7 \times 10\ m^3$

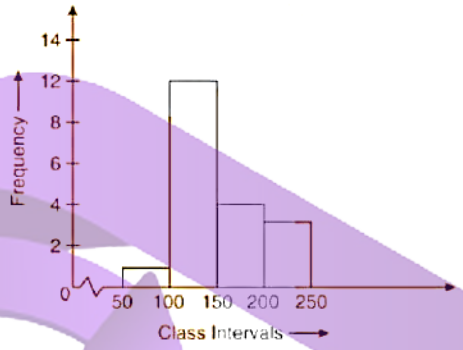
$= \ 22 \times 7 \times 10\ m^3$ **1**

$= \ 1540\ m^3$

24.

Class Interval	Frequency
50 – 100	1
100 – 150	12
150 – 200	4
200 – 250	3

2



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25. **(a)** $\left\{\frac{7}{5}\times\left(\frac{-3}{12}\right)\right\}+\left\{\frac{7}{5}\times\frac{5}{12}\right\}=\frac{7}{5}\times\frac{-3}{12}+\frac{7}{5}\times\frac{5}{12}$

$=\frac{7}{5}\left\{\frac{-3}{12}+\frac{5}{12}\right\}$ (by distributivity)

$=\frac{7}{5}\left\{\frac{-3+5}{12}\right\}$

$=\frac{7}{5}\times\frac{2}{12}=\frac{14}{60}=\frac{7}{30}$ **2**

(b) $\left\{\frac{9}{16}\times\frac{4}{12}\right\}+\left\{\frac{9}{16}\times\frac{-3}{9}\right\}=\frac{9}{16}\times\frac{4}{12}+\frac{9}{16}\times\frac{-3}{9}$

$=\frac{9}{16}\left\{\frac{4}{12}+\left(\frac{-3}{9}\right)\right\}$ (by distributivity)

$=\frac{9}{16}\left\{\frac{4}{12}-\frac{3}{9}\right\}=\frac{9}{16}\left\{\frac{12-12}{36}\right\}$

$=\frac{9}{16}\times 0=0$ **2**

26. Let shirt material be $3x$ and trouser material be $2x$ metres.

The cost of shirt material $=50\times 3x=150x$

The selling price at 12% profit $=\frac{100+12}{100}\times 150x$

$=\frac{112}{100}\times 150x$

$=168x$

The cost of trouser material $=90\times 2x=180x$ **2**

The selling price at 10% profit $=\frac{100+10}{100}\times 180x$

$= \frac{110}{100} \times 180x = 198x$

According to question,

$168x + 198x = 36,600$

or, $366x = 36,600$

or, $x = \frac{36600}{366}$

or, $x = 100$

$\therefore$ Trouser material $= 2 \times 100 = 200\ m$

Hence, Hasan bought 200 m trouser material.

27. **(a)** $71^2 = (70+1)^2$

Use the identity,

$(a+b)^2 = a^2 + 2ab + b^2$

$= (70)^2 + 2(70)(1) + (1)^2$

$= 4900 + 140 + 1$

$= 5041$

½

(b) $99^2 = (100-1)^2$

Use the identity,

$(a-b)^2 = a^2 - 2ab + b^2$

$= (100)^2 - 2(100)(1) + 1$

$= 10000 - 200 + 1$

$= 10001 - 200$

$= 9801$

½

(c) $102^2 = (100+2)^2$

Use the identity,

$(a+b)^2 = a^2 + 2ab + b^2$

$= (100)^2 + 2(100)(2) + (2)^2$

$= 10000 + 400 + 4$

$= 10404$

½

(d) $998^2 = (1000-2)^2$

Use the identity,

$(a-b)^2 = a^2 - 2ab + b^2$

$= (1000)^2 - 2(1000)(2) + (2)^2$

$= 1000000 - 2(1000)(2) + (2)^2$

$= 1000000 - 4000 + 4$

$= 996004$

½

(e) $5.2^2 = (5+0.2)^2$

$= (5)^2 + 2(5)(0.2) + (0.2)^2$

$= 25 + 2 + 0.04$

$= 27 + 0.04$

$= 27.04$

½

(f) $297 \times 303 = (300 - 3)\ (300 + 3)$

Use the identity,

$(a-b)(a+b) = a^2 - b^2$

$= (300)^2 - (3)^2$

$= 90000 - 9$

$= 89991$

½

(g) $78 \times 82 = (80-2) \times (80+2)$

Use the identity,

$(a-b)(a+b) = a^2 - b^2$

$= (80)^2 - (2)^2$

$= 6400 - 4$

$= 6396$

½

(h) $8.9^2 = (9-0.1)^2$

Use the identity,

$(a-b)^2 = a^2 - 2ab + b^2$

$= (9)^2 - 2\ (9)(0.1) + (0.1)^2$

$= 81 - 1.8 + 0.01$

$= 79.21$

½

28. Area of trapezium $AEHD = \frac{1}{2} \times h \times$ (sum of parallel sides)

$= \frac{1}{2} \times 4 \times (28 + 20)$

$= 2 \times 48 = 96\ cm^2$

Area of trapezium $DHGC = \frac{1}{2} \times h \times$ (sum of parallel sides)

$= \frac{1}{2} \times 4 \times (24 + 16)$

$= 2 \times 40 = 80\ cm^2$

Area of trapezium $BFGC = \frac{1}{2} \times h \times$ (sum of parallel sides)

$= \frac{1}{2} \times 4 \times (28 + 20)$

$= 2 \times 48 = 96 cm^2$

Area of trapezium $AEFB = \frac{1}{2} \times h \times$ (sum of parallel sides)

$= \frac{1}{2} \times 4 \times (24 + 16)$

$= 2 \times 40 = 80\ cm^2$

29. Let us suppose that there are x parents.

90 parents who help for $\frac{1}{2}$ hr to $1\frac{1}{2}$ hr.

They show the percentage is 30%, then according to formula.

Percentage value = The percentage of whole value

90 = 30% of x

$90 = \frac{30x}{100}$

$\frac{90 \times 100}{3} = x$

$x = 300$

½

There are 300 parents:

20% helped for more than $1\frac{1}{2}$ hr. per day.

Again, according to condition,

Percentage value = Percentage of whole value

= 20% of x

$= \frac{20}{100} \times 300$ ½

Percentage value = 60 parents who helped their children more than $1\frac{1}{2}$ hr per day 50% did not help at all.

Again, using formula,

Percentage value = Percentage of whole value

= 50% of x

$= \frac{50}{100} \times 300$

Percentage value = 150 parents did not help at all

(a) 20% helped for more than $1\frac{1}{2}$ hr per day + 30% helped for $\frac{1}{2}$ hr to $1\frac{1}{2}$ hr per day = The value of 20% + The value of 30% + The value of 50% + 50% did not help = 60 parents who help their children more than $1\frac{1}{2}$ hr. + 90 parents who help their children $\frac{1}{2}$ hr to $1\frac{1}{2}$ hr. + 150 parents who did not help = 300 parents who help their children

1

(b) The value of 50% parents they said did not help = 150 **1**

(c) The value of 20% who said that they help their children more than $1\frac{1}{2}$ hr = 60 parents

1

30. **(a)** Let the length of the shadow be x m.

Height	5 m 60 cm	10 m 50 cm
Length	3 m 20 cm	x

5 m 60 cm = 5.60 m
3 m 20 cm = 3.20 m
10 m 50 cm = 10.50 m

$\therefore \quad \frac{5.60}{3.20} = \frac{10.50}{x}$

$\Rightarrow \quad x = \frac{10.50 \times 3.20}{5.60}$

$\Rightarrow \quad x = 6m$ **2**

(b) Let the height of a pole be y m.

Height (m)	5.60 m	y
Length (m)	3.20 m	5

$\frac{5.60}{3.20} = \frac{y}{5}$

$\Rightarrow \quad y = \frac{5.60 \times 5}{3.20} = 8.75$

or y = 8 m 75 cm **2**