VIII Revision worksheet (HW for Monday - 6th Dec)

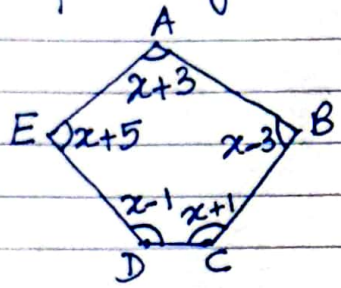
1) Simplify: (a) $\frac{3}{7} \times \frac{28}{15} \div \frac{14}{5}$

(b) $\frac{3}{7} + \left(\frac{-2}{21}\right) \times \left(\frac{-5}{6}\right)$

2) $-\frac{4}{7}$ is ___ than $-\frac{4}{5}$.

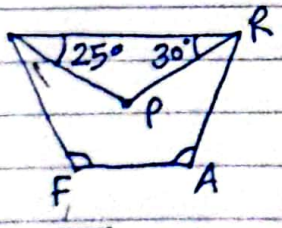
3) Solve for t: $\frac{3t-2}{3} + \frac{2t+3}{2} = t + \frac{7}{6}$

4) Find the value of $2m + \frac{1}{2}n$, if m and n are the solutions of the equations $\frac{m+3}{7-2m} = \frac{1}{2}$ and $\frac{1}{4}(n+4) = 2n-3$ respectively.

5) 

find the value of x and measure of each interior angles of the polygon shown in the figure.

6) If sum of all interior angles of a regular polygon is 18 right angles. Then, find the no. of sides of the polygon.

7) 

In a trapezium FARE, ER || FA, EP and RP are bisectors of ∠E and ∠R respectively. Find ∠FAR and ∠EFA

8) If $\sqrt{x} + 43 = \sqrt{19881}$, then find the value of x

9) Find the value of $\sqrt{400} + \sqrt{0.04} - \sqrt{0.00000004}$

10) Find the value of $\left[\left(24^2 + 7^2\right)^{\frac{1}{2}}\right]^3$

11) Find the Cube of $5\frac{2}{7}$

12) If 25% of x is 150, then find the value of x.

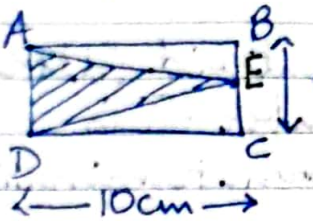
13) 3500 is greater than 500 by ___ %

14) Using suitable identities, evaluate:
(i) 99^2
(ii) $(100)^2 - (99)^2$

15) If $x^2 + y^2 = 25$ and $xy = 8$, then the value of
(i) $x - y$ (ii) $x + y$

16) If $x - y = 3$ and $xy = 8$, then find the value of $x^2 + y^2$.

17) If $x^2 + \frac{1}{x^2} = 23$, then find the value of
(i) $x + \frac{1}{x}$ (ii) $x - \frac{1}{x}$

18) 

What is the area of $\triangle ADE$?

19) Express the product of 1.3×10^4 and 3.4×10^{-2} in the standard form.

20) If $5^{3x-1} \div 25 = 125$, find the value of x.

21) Factorise in prime factor form:
(i) 90 (ii) 54

22) Factorise:
(i) $34ab^2$ (ii) $81x(x+4)$ (iii) $37x(x-1)(x+2)$

23) Factorise:
(i) $21x^2y^3 + 27x^3y^2$ (ii) $51p^2q - 17p$ (iii) $19m^2n^3 - 57mn^3$

24) Factorise:
(i) $3x^2 - 9xy + 5x - 15y$
(ii) $55xyz + 33yz + 25x + 15$
(iii) $x^2 + xy + 2x + 2y$

25) Factorise:
(i) $p^2(2x+y) + 2q^2(2x+y) - 3r^2(2x+y)$
(ii) $(m+2n)(2p-q) + (m-2n)(2p+q)$
(iii) $4(x+y)(3a-b) + 6(x+y)(2b-3a)$

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VIII Revision worksheet – Answers

1) (a) $\frac{3}{7_1} \times \frac{\overset{4}{28}}{\underset{3}{15}} \times \frac{\overset{1}{5}}{14} = \frac{\overset{1}{3} \times \overset{2}{4}}{3 \times 14_7} = \frac{2}{7}$

(b) $\frac{3}{7} + \left(\frac{\overset{1}{-2}}{21} \times \frac{-5}{\underset{3}{6}}\right) = \frac{\overset{1}{3} \times 9}{7 \times 9} + \frac{5}{63}$

$= \frac{27+5}{63} = \frac{32}{63}$

2) $-\frac{4}{7}$ is greater than $-\frac{4}{5}$

$-\frac{4 \times 5}{7 \times 5}$ $\boxed{>}$ $-\frac{4 \times 7}{5 \times 7}$

$-\frac{20}{35}$ $-\frac{28}{35}$

3) $\frac{3t-2}{3} + \frac{2t+3}{2} = t + \frac{7}{6}$

$\frac{2(3t-2)+3(2t+3)}{6_1} = \frac{6t+7}{6_1}$

$6t - 4 + 6t + 9 = 6t + 7$

$6t + 5 = 7$

$\therefore 6t = 2$

$t = \frac{2}{6} = \frac{1}{3}$

4) $\frac{m+3}{7-2m} = \frac{1}{2}$

$2m + 6 = 7 - 2m$

$4m = 1$

$m = \frac{1}{4}$

$\frac{1}{4}(n+4) = 2n - 3$

$n + 4 = 8n - 12$

$16 = 7n$

$7n = 16$

$n = \frac{16}{7}$

$\therefore 2m + \frac{1}{2}n = \overset{1}{2} \times \frac{1}{\underset{2}{4}} + \frac{1}{\underset{1}{2}} \times \frac{\overset{8}{16}}{7} = \frac{1 \times 7}{2 \times 7} + \frac{8 \times 2}{7 \times 2}$

$= \frac{7+16}{14} = \frac{23}{14}$

5) Sum of interior angles of a pentagon $= (n-2) \times 180°$

$= (5-2) \times 180$

$= 3 \times 180 = 540$

$\therefore x+3+x-3+x+1+x-1+x+5 = 540^\circ$

$5x+5 = 540^\circ$

$5x = 535$

$x = \frac{535}{5} = 107^\circ$

Thus each interior angles, $\angle A = x+3 = 107+3 = 110^\circ$

$\angle B = x-3 = 107-3 = 104^\circ$

$\angle C = x+1 = 107+1 = 108^\circ$

$\angle D = x-1 = 107-1 = 106^\circ$

$\angle E = x+5 = 107+5 = 112^\circ$

6) Sum of interior angles of a regular polygon,

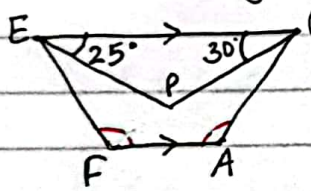
$(n-2)\times 180^\circ = 18\times 90^\circ$

$n-2 = \frac{18\times 90^{1}}{180_{2}} = 9$

$\therefore n = 9+2 = 11$

Thus, no. of sides of the polygon = 11 sides

7)



Since EP bisects $\angle E$, $\angle REF = 2\times 25^\circ$

$= 50^\circ$

and PR bisects $\angle R$, $\angle ERA = 2\times 30^\circ = 60^\circ$

Also, since ER || FA, $\angle REF + \angle EFA = 180^\circ$ (Co-interior angles)

$\therefore \angle EFA = 180^\circ - 50^\circ = 130^\circ$ //

and $\angle ERA + \angle RAF = 180^\circ$ (Co-interior angles)

$\therefore \angle RAF = 180^\circ - 60^\circ = 120^\circ$ //

8) $\sqrt{x} + 43 = \sqrt{19881}$

$\sqrt{x} + 43 = 141$

$\sqrt{x} = 141 - 43 = 98$

Squaring on both sides,

$(\sqrt{x})^2 = 98^2$

$\therefore x = 9604$

$\sqrt{19881} = 141$

1	19881
	1
24	98
	96
281	281
	281
	0

9) $\sqrt{400} = 20$

$\sqrt{0.04} = 0.2$

$\sqrt{0.00000004} = 0.0002$

Thus, $20 + 0.2 - 0.0002 = 20.1998$

10) $\left(\left(24^2+7^2\right)^{\frac{1}{2}}\right)^3 = \left(\left(576+49\right)^{\frac{1}{2}}\right)^3$

$= \left(\left(625\right)^{\frac{1}{2}}\right)^3$

$= \left(25^{2\times\frac{1}{2}}\right)^3$

$= 25^3 = \underline{\underline{15625}}$

11) $\left(5\frac{3}{7}\right)^3 = \left(\frac{37}{7}\right)^3$

$= \underline{\underline{\frac{50653}{343}}}$

12) 25% of $x = 150$

$\frac{25}{100} \times x = 150$

$x = \frac{150\times\cancel{100}^{4}}{\cancel{25}_{1}} = \underline{\underline{600}}$

13) Change in value $= 3500 - 500 = 3000$

$\therefore$ % increase $= \frac{3000}{500} \times 100\%$

$= \underline{\underline{600\%}}$

14) (i) $99^2 = (100-1)^2$ $\quad [(a-b)^2 = a^2 - 2ab + b^2]$

$= (100)^2 - 2\times100\times1 + (1)^2$

$= 10000 - 200 + 1 = 10001 - 200$

$= \underline{\underline{9801}}$

(ii) $100^2 - 99^2 = (100+99)(100-99)$ $\quad [a^2-b^2 = (a+b)(a-b)]$

$= 199 \times 1$

$= \underline{\underline{199}}$

15) $x^2+y^2 = 25$
$xy = 8$

(i) $(x-y)^2 = x^2+y^2-2xy = 25-2\times8 = 25-16 = 9$
$\therefore x-y = \sqrt{9} = \underline{\underline{3}}$

(ii) $(x+y)^2 = x^2+y^2+2xy = 25+2\times8 = 25+16 = 41$
$\therefore x+y = \underline{\underline{\sqrt{41}}}$

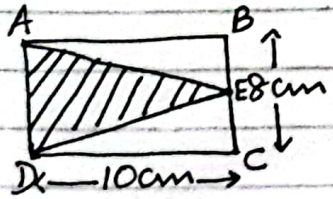
16) $x-y = 3$
$xy = 8$
$(x-y)^2 = x^2+y^2-2xy$
$\Rightarrow 3^2 = x^2+y^2-2\times8$
$\Rightarrow x^2+y^2 = 9+16 = \underline{\underline{25}}$

17) $x^2+\frac{1}{x^2} = 23$

(i) $\left(x+\frac{1}{x}\right)^2 = x^2+\frac{1}{x^2}+2 = 23+2 = 25$
$\therefore x+\frac{1}{x} = \sqrt{25} = \underline{\underline{5}}$

(ii) $\left(x-\frac{1}{x}\right)^2 = x^2+\frac{1}{x^2}-2 = 23-2 = 21$
$\therefore x-\frac{1}{x} = \underline{\underline{\sqrt{21}}}$

18)



$\text{Area}(\Delta ADE) = \frac{1}{2}\times AD\times DC$
$= \frac{1}{2}\times 8\times 10^{5} = \underline{\underline{40\,cm^2}}$

19) $1.3\times10^4 \times 3.4\times10^{-2} = 4.42\times10^{4-2} = \underline{\underline{4.42\times10^2}}$

20) $\frac{5^{3x-1}}{25} = 125$
$5^{3x-1} = 25\times125$
$5^{3x-1} = 5^5$
$\therefore 3x-1 = 5$
$3x = 6$
$\underline{\underline{x = 2}}$

21) (i) $90 = 3^2 \times 2 \times 5$

$3 \mid 90$
$3 \mid 30$
$2 \mid 10$
5

(ii) $54 = 3^3 \times 2$

$2 \mid 54$
$3 \mid 27$
$3 \mid 9$
3

22) (i) $34ab^2 = 2 \times 17 \times a \times b \times b$

$2 \mid 34$
17

(ii) $81x(x+4) = 3 \times 3 \times 3 \times 3 \times x \times (x+4)$

(iii) $37x(x-1)(x+2) = 37 \times x \times (x-1) \times (x+2)$

23) (i) $21x^2y^3 + 27x^3y^2$
$= 3x^2y^2(7y+9x)$

(ii) $51p^2q - 17p$
$= 17p(3pq-1)$

(iii) $19m^2n^3 - 57mn^3$
$= 19mn^3(m-3)$

24) (i) $3x^2 - 9xy + 5x - 15y$
$= 3x(x-3y) + 5(x-3y)$
$= (3x+5)(x-3y)$

(ii) $55xyz + 33yz + 25x + 15$
$= 11yz(5x+3) + 5(5x+3)$
$= (5x+3)(11yz+5)$

(iii) $x^2 + xy + 2x + 2y$
$= x(x+y) + 2(x+y)$
$= (x+y)(x+2)$

25) (i) $p^2(2x+y) + 2q^2(2x+y) - 3r^2(2x+y)$
$= (2x+y)(p^2+2q^2-3r^2)$

(ii) $(m-2n)(2p-q)+(m-2n)(2p-q)$

$=2(m-2n)(2p-q)$

(iii) $4(x+y)(3a-b)+6(x+y)(2b-3a)$

$= 2(x+y)(2(3a-b)+3(2b-3a))$

$= 2(x+y)(6a-2b+6b-9a)$

$= 2(x+y)(4b-3a)$