Level 7 Summer Review

1) Find the value of t in the formula $s = \frac{1}{2}gt^2$ when $g = 9.8$ and $s = 40$

$S = \frac{1}{2}gt^2$

$40 = \frac{1}{2}(9.8)(t)^2$

$40 = (4.9)t^2$

$t^2 = \frac{40}{4.9}$

$t^2 = \frac{400}{49}$

$t = \frac{20}{7}$

$t = 20/7$

2) Find the value of C in the formula $F = \frac{9}{5}C + 32$ when $F = 68$

$F = \frac{9}{5}C + 32$

$68 = \frac{9}{5}C + 32$

$68 - 32 = \frac{9}{5}C$

$\frac{36 \times 5}{9} = C$

$C = 20$

$C = 20$

3) Find the value of u in the formula $\frac{1}{f} = \frac{1}{u} + \frac{1}{v}$ when $v = 15$ and $f = 5$

$\frac{1}{f} = \frac{1}{u} + \frac{1}{v}$

$\frac{1}{5} = \frac{1}{u} + \frac{1}{15}$

$\frac{1}{u} = \frac{1}{5} - \frac{1}{15}$

$\frac{1}{u} = \frac{10}{75}$

$u = 7.5$

$u =$ 7.5

4) Classify as rational or irrational numbers

	C1	C2	C3	C4
a)	$\sqrt{101}$ Irrational	$65.47\overline{9}$ Irrational	65.479 Rational	$65.\overline{479}$ Irrational
b)	$\frac{65}{14}$ Rational	$\sqrt{64}$ Rational	$\sqrt{8}$ Irrational	$\sqrt[3]{8}$ Rational
c)	$\sqrt[3]{5}$ Irrational	0 Rational	-1.3 Rational	$-3.15\overline{3}$ Irrational

5) Find the value of the variable

$\left[\left(\frac{5}{9}\right)^3\right]^4 = \left(\frac{5}{9}\right)^{x+2}$

Bases are equal so exponents are equal

$12 = x+2$

$x = 10$

$x = 10$

$\left[(3)^6\right]^4 = (3)^{8x}$

$(3)^{24} = (3)^{8x}$

Bases equal, hence exponents equal

$24 = 8x$

$x = 3$

6) $25 \times 5^x = 5^7$

$(5)^2 \times (5)^x = (5)^7$

Bases equal, hence exponents equal

$2 + x = 7$

$x = 5$

$49 \times 7^x = 7^{10}$

$(7)^2 \times (7)^x = (7)^{10}$

$2 + x = 10$

$x = 8$

$x = 8$

7) Simplify $2a - 3b + [-3a - 2b - \{a - c - (a + 2b)\}]$

$2a - 3b + [-3a - 2b - (a - c - a - 2b)]$

$= 2a - 3b + [-3a - 2b + c + 2b]$

$= 2a - 3b - 3a + c$

$-a - 3b + c$

8) Simplify $3a(a^2 - 2a + 5) - (2a^2)(5a - 3) - 7(2a^2 - 5a - 9)$

$3a^3 - 6a^2 + 15a - 10a^3 + 6a^2 - 14a^2 + 35a + 63$

$= -7a^3 - 14a^2 + 50a + 63$ (collect like terms)

$-7a^3 - 14a^2 + 50a + 63$

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

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

9) Find n if

$\left[\frac{3}{5}\right]^4 * \left[\frac{3}{5}\right]^3 = \left[\frac{3}{5}\right]^{2n-1}$

$\left(\frac{3}{5}\right)^{4+3} = \left(\frac{3}{5}\right)^{2n-1}$

Exponents are equal

$7 = 2n-1$

$2n = 8$

$n = 4$

$n = 4$

10) Find n if

$\left[\frac{2}{5}\right]^4 * \left[\frac{2}{5}\right]^5 = \left[\frac{2}{5}\right]^{2x-1}$

$\left(\frac{2}{5}\right)^{5+4} = \left(\frac{2}{5}\right)^{2x-1}$

Bases are equal, so exponents are equal

$9 = 2x-1$

$2x = 10$

$x = 5$

$x = 5$

11) Expand $\left(3a+\frac{2}{3}b\right)^2 = \left(3a+\frac{2}{3}b\right)\left(3a+\frac{2}{3}b\right)$

$(3a)^2 + 2(3a)\left(\frac{2}{3}b\right) + \left(\frac{2}{3}b\right)^2$

$= 9a^2 + 4ab + \frac{4}{9}b^2$

$9a^2+4ab+\frac{4}{9}b^2$

12) Expand $\left(3a-\frac{2}{3}b\right)^2 = \left(3a-\frac{2}{3}b\right)\left(3a-\frac{2}{3}b\right)$

$= (3a)^2 - 2(3a)\left(\frac{2}{3}b\right) + \left(\frac{2}{3}b\right)^2$

$= 9a^2 - 4ab + \frac{4}{9}b^2$

$9a^2-4ab+\frac{4}{9}b^2$

13) Expand $\left(7p-\frac{3}{5}q\right)^2 = \left(7p-\frac{3}{5}q\right)\left(7p-\frac{3}{5}q\right)$

$= (7p)^2 + \left(\frac{3}{5}q\right)^2 - 2(7p)\left(\frac{3}{5}q\right)$

$49p^2 + \frac{9}{25}q^2 - \frac{42}{5}pq$

Simplify

14) $\dfrac{(-3)^3 \times 2^4 \times 5}{15 \times 3 \times 2^2}$

$= \dfrac{(-3)^3 \times (2)^4 \times (5)}{(3) \times (5) \times 3 \times (2)^2}$

$= -\left[(3)^3 \times (3)^{-2} \times (2)^4 \times (2)^{(-2)} \times\right]$

$= -(3) \times (2)^2$

$= -12$

$\dfrac{(2^3)^2 \times (-3)^2}{(3^2)^2 \times 16}$

$= \dfrac{(2)^6 \times (-3)^2}{(3)^4 \times (1)^4}$

$= \dfrac{(2)^6 \times (3)^2}{(3)^4 \times (2)^4} = 2^2 \times \dfrac{1}{3^2}$

$= 4/9$

15) $\dfrac{(2^{-3})^2 \times (3^2)^{-3}}{(2^{-2})^5 \times [(3)^3]^{-2}}$

$= \dfrac{(2)^{-6} \times (3)^{-6}}{(2)^{-10} \times (3)^{-6}}$

$= \dfrac{2^{10} \times 3^6}{3^6 \times 2^6} = 2^{10-6} = 2^4$

$= 16$

$\left\{\left(\dfrac{-2}{3}\right)^3 \times \left(\dfrac{-3}{4}\right)^2\right\}^{-2}$

$= \left[-\left(\dfrac{2}{3}\right)^3 \times \left(\dfrac{3}{4}\right)^2\right]^{-2}$

$= \left[-\left(\dfrac{2^3 \times 3^2}{3^3 \times 4^2}\right)\right]^{-2}$

$= \left[-\dfrac{1}{6}\right]^{-2} \Rightarrow [-6]^2$

$= 36$

16) Expand $\left(\dfrac{p}{5} + \dfrac{q}{6}\right)^2$

$= \left(\dfrac{p}{5}\right)^2 + 2\left(\dfrac{p}{5}\right)\left(\dfrac{q}{6}\right) + \left(\dfrac{q}{6}\right)^2$

$= \dfrac{p^2}{25} + \dfrac{pq}{15} + \dfrac{q^2}{36}$

$\left(p^2/25\right) + \left(pq/15\right) + \left(q^2/36\right)$

17) Expand $\left(3x - \frac{1}{2x}\right)^2$ $= (3x)^2 - 2(3x)\left(\frac{1}{2x}\right) + \left(\frac{1}{2x}\right)^2$

$= 9x^2 - 3 + \frac{1}{4x^2}$

$9x^2 - 3 + \frac{1}{4x^2}$

18) Expand $\left(3x + \frac{1}{2x}\right)^2 = (3x)^2 + 2(3x)\left(\frac{1}{2x}\right) + \left(\frac{1}{2x}\right)^2$

$= 9x^2 + 3 + \frac{1}{4x^2}$

$9x^2 + 3 + \frac{1}{4x^2}$

19) Factorize $(4y^2 - 25)$ $\quad a^2 - b^2 = (a+b)(a-b)$

$= (2y)^2 - (5)^2$

$= (2y-5)(2y+5)$

$(2y-5)(2y+5)$

20) Factorize $(25x^2 - 36y^2)$

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

$= (5x-6y)(5x+6y)$

$(5x+6y)(5x-6y)$

21) Factorize $(x^2y^2 - 64)$

$= (xy)^2 - (8)^2$

$= (xy-8)(xy+8)$

$(xy-8)(xy+8)$

22) Factorize $(x^4 - 81)$

$= (x^2)^2 - (9)^2$

$= (x^2+9)(x^2-9)$

$= (x^2+9)(x+3)(x-3)$

$(x^2+9)(x+3)(x-3)$

23) solve: $\frac{(x+3)}{7} - \frac{(3x-5)}{5} = \frac{(2x-5)}{3}$

LCM of 7, 5 and 3 = 105

$\frac{15(x+3)}{105} - \frac{21(3x-5)}{105} = \frac{35(2x-5)}{105}$

$15x + 45 - 63x + 105 = 70x - 175$

$15x + 150 - 63x = 70x - 175$

$-48x - 70x = -175 - 150$

$-118x = -325$

$x = 325/118$

$x = 325/118$

24) solve: $\frac{(x-4)}{7} - \frac{(x+4)}{5} = \frac{(x+3)}{7}$

LCM = 35

$\frac{(x-4)}{7} - \frac{(x+3)}{7} = \frac{(x+4)}{5}$

$\frac{x-4-x-3}{7} = \frac{x+4}{5}$

$\frac{-7}{7} = \frac{x+4}{5}$

$-1 = \frac{x+4}{5}$

$x + 4 = -5$

$x = -9$

$x = -9$

25) solve: $\frac{2}{3}(3x-2) = \frac{4}{5}(2x-3)$

$\frac{2(3x-2)}{3} = \frac{4(2x-3)}{5}$

Cross multiplying

$5(6x-4) = 3(8x-12)$

$30x - 20 = 24x - 36$

$6x = -16$

$x = -\frac{8}{3}$

$x = -8/3$

26) solve: $\frac{3}{2}(2x-5) - \frac{5}{3}(1-x) = \frac{7x}{3}$

$\left[\frac{3(2x-5)}{2}\right] - \left[\frac{5(1-x)}{3}\right] = \frac{7x}{3}$

$\frac{6x-15}{2} = \frac{7x}{3} + \frac{(5-5x)}{3}$

$\frac{6x-15}{2} = \frac{7x+5-5x}{3}$

$\frac{6x-15}{2} = \frac{2x+5}{3}$

$18x - 45 = 4x + 10$

$14x = 55$

$x = (55/14)$

27) solve: $2x + \frac{11}{4} = \frac{x}{3} + 2$

$\frac{2x}{1} - \frac{x}{3} = 2 - \frac{11}{4}$

$\frac{5x}{3} = \frac{8-11}{4}$

$\frac{5x}{3} = \frac{-3}{4}$

$20x = -9$

$x = \frac{-9}{20}$

$x = -9/20$

28) solve: $3x - 2(2x-5) = 2(x+3) - 8$

$3x - 4x + 10 = 2x + 6 - 8$

$-x + 10 = 2x - 2$

$-3x = -12$

$x = 4$

$x = 4$

29) Two complementary angles differ by 8 degrees. What is the measure of the greater angle?

Sum(complementary angles) = 90^0

Let Smaller angle = x

Larger angle = $x+8$

$x + x + 8 = 90$

$2x = 82$

$x = 41$

$41 + 8$

Greater $\angle$ = 49^0

30) One fourth of a number is increased by 7 and the result is multiplied by 3 and we get 36. What is the original number?

Let the # be x

$\left[\frac{1}{4}x + 7\right] \times 3 = 36$

$\left(\frac{1}{4}x + 7\right) = 12$

$\frac{1}{4}x = 5$

$x = 5 \times 4$

$\# = 20$

is 20

31) Divide (a) (b)

(a)

$$6mn \overline{)\ 12m^2n - 18n^2m + 24}\ \Big|\ 2m - 3n$$

$-12m^2n$

$-18n^2m$

$+ -18n^2m$

$0 \quad +24$

Q = $2m - 3n$ R = 24

(b)

$$3x^2 \overline{)\ 6x^5 + 18x^4 - 3x^2}\ \Big|\ 2x^3 + 6x^2 - 1$$

$-(6x^5)$

$18x^4$

$-(18x^4)$

$0 \quad -3x^2$

$-(-3x^2)$

0

Q = $2x^3 + 6x^2 - 1$ R = 0

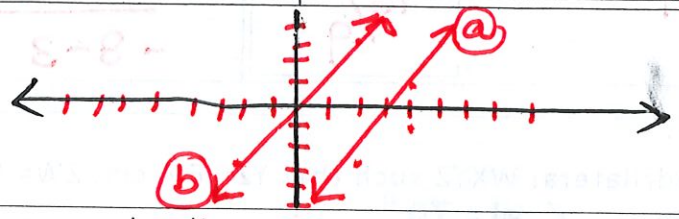
32) Plot the linear equations of a graph paper

(a) $2x - y = 7$ ⓐ $y = 2x + 7$

x	0	2	4	
y	-7	-3	1	

(b) $3x = 2y$ ⓑ $x = \frac{2}{3}y$ OR $y = \frac{3}{2}x$

x	2	-2	0	
y	3	-3	0	



33) Plot the inequalities on a number line

(a) $x + 3 \geq 5$

$-3 \quad -3$

$x \geq 2$

(b) $-x - 2 < 3(2x - 7)$

$+2 \qquad +2$

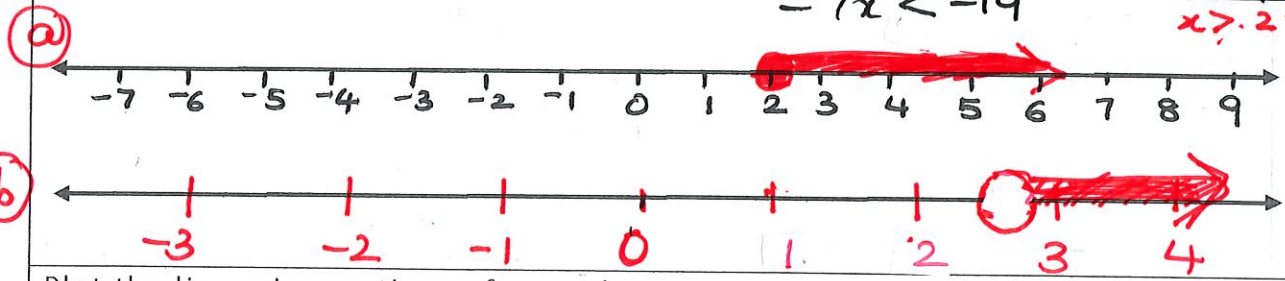
$-x < 6x - 21 + 2$

$-x < 6x - 19$

$-6x \quad -6x$

$-7x < -19$

$x > \frac{19}{7}$ $\quad x > 2\frac{5}{7}$



34) Plot the linear inequations of a graph paper

(a) $x + 2y < 3$

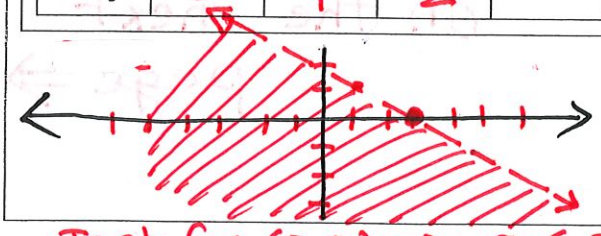
Solve for $x + 2y = 3$

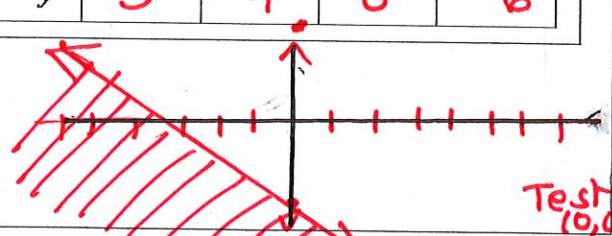
x	3	1	-1	
y	0	1	2	

(b) $x - 2y \geq 7$

Solve for $x = 7 + 2y$

x	-3	-1	7	-5
y	-5	-4	0	-6





Test for (0,0) $\Rightarrow$ $0 < 3$ (True)

Test Any (0,0) $0 \geq$? (False)

Pg ⑨

35) Find the slope of the line if the ordered pairs are given

$(-3,-5)(6,11)$ (x_1, y_1, x_2, y_2)

$\text{Slope} = \frac{y_2 - y_1}{x_2 - x_1} = \frac{11+5}{6+3}$

$\text{Slope} = \frac{16}{9}$

$\frac{16}{9}$

$(3,2)(-8,-2)$ (x_1, y_1, x_2, y_2)

$\text{slope} = \frac{y_2 - y_1}{x_2 - x_1}$

$= \frac{-2-2}{-8-3} = \frac{-4}{-11}$

$\frac{4}{11}$

36) Construction:

a) Draw Quadrilateral WXYZ such that YZ= 6.4 cm, ZW= 5.3cm and XY= 4.2 cm and WX= 4.8cm $\angle W = 70^\circ$

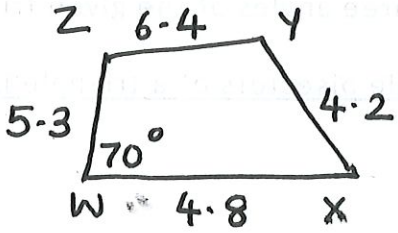
b) ΔABC *such that* $AB = 5.7\ cm$, $\angle A = 110^\circ$ *and* $\angle C = 35^\circ$

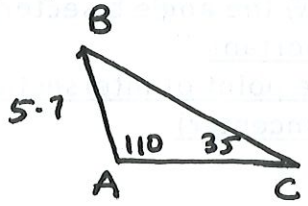
on the next page ⇒

Answer Key

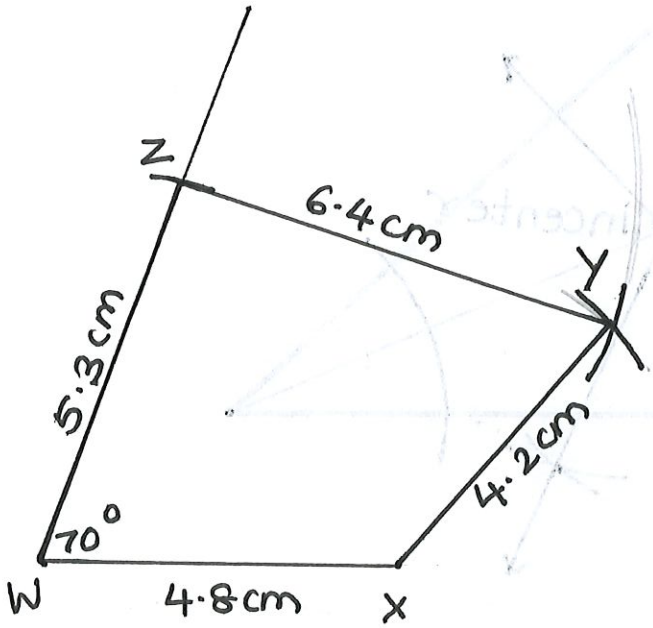
Pg 10

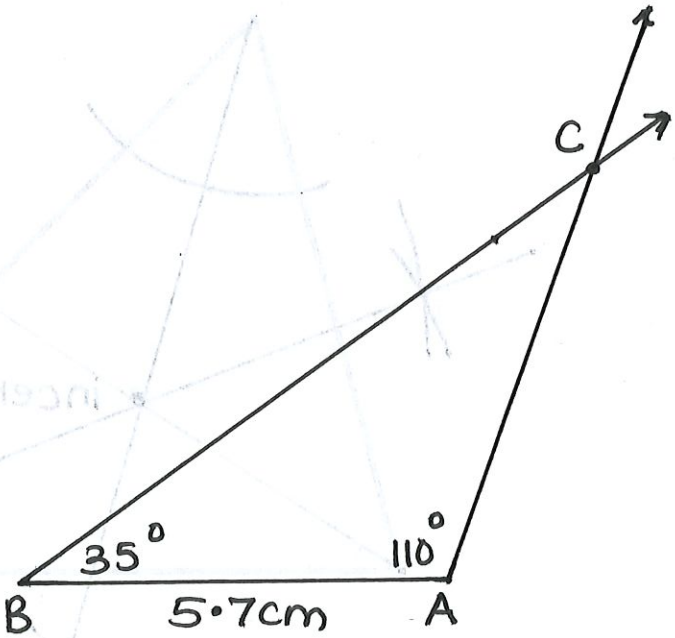
Q3 6





$\angle B = 180 - 145$
$= 35°$





Pg 10

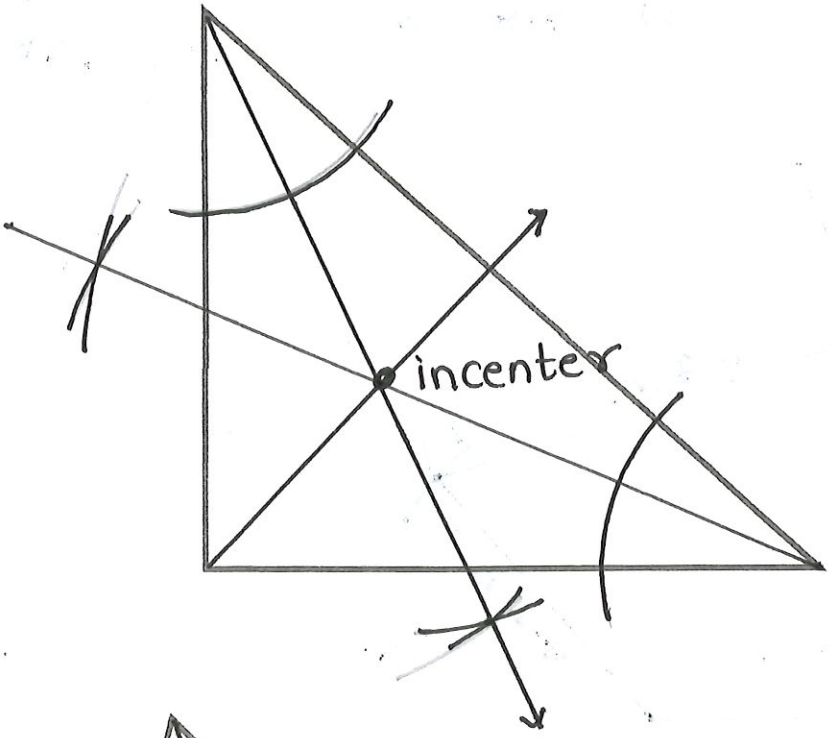
Answer key

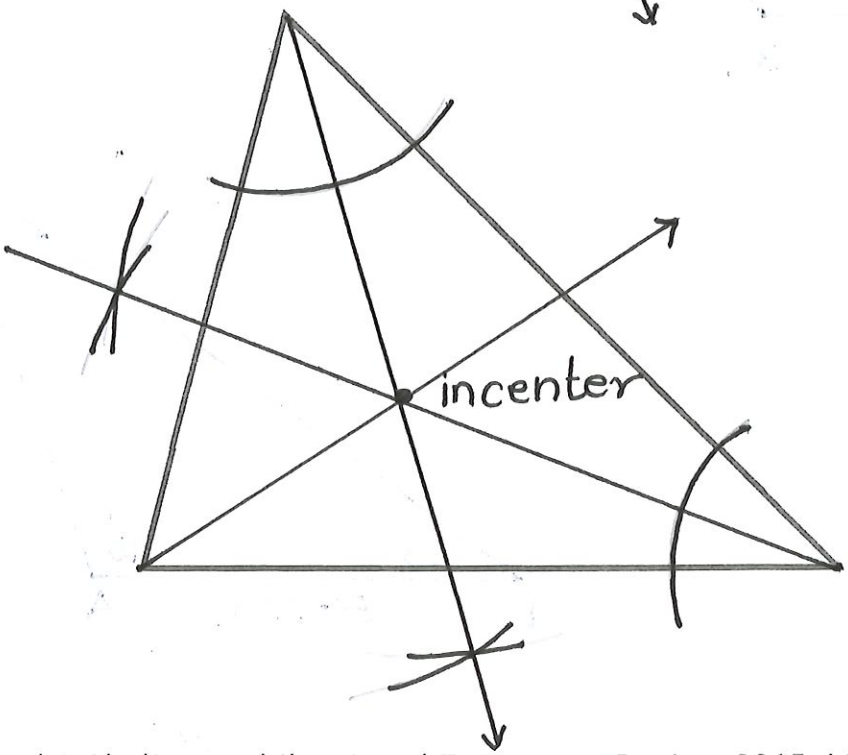
Pg 22

77) Draw the angle bisectors to all the three angles of the given triangles

Important:

(The point of intersection of the angle bisectors of a triangle is called the incenter)

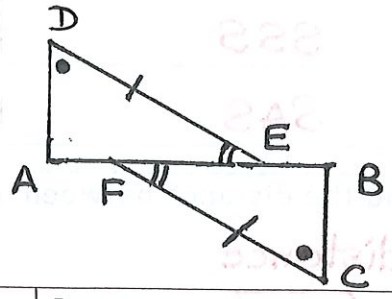




37)

Given: $\angle D = \angle C$, $\angle E = \angle F$, $\overline{DE} \cong \overline{FC}$

To Prove: $\triangle DAE$ and $\triangle CBF$ are congruent



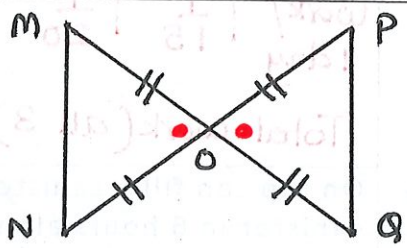
Proof:

	Statement	Reason
1.	In $\triangle DAE$ and $\triangle CBF$	
a)	$\angle D \cong \angle C$	Given
b)	$\angle DEA \cong \angle CFB$	Given
c)	$\overline{DE} \cong \overline{CF}$	Given
2	$\triangle DAE \cong \triangle CBF$	ASA postulate

38)

Given: $MO = OQ = OP = ON$

To Prove: $\triangle MNO \cong \triangle QPO$ and $\overline{MN} \cong \overline{PQ}$



Proof:

	Statement	Reason
1.	In $\triangle MNO$ and $\triangle PQO$	
a	$\angle MON \cong \angle QOP$	vertical angles
b	$MO \cong OQ$	Given
c	$NO \cong PO$	Given
2	$\triangle MNO \cong \triangle QPO$	SAS postulate.
3	$\overline{MN} \cong \overline{QP}$	cpctc

39) Name all the tests for congruence of two triangles

SSS	ASA	HL
SAS	SAA	—

40) find the distance between the points $(4, 9)$ *and* $(-6, 4)$

$x_1\ y_1$ $x_2\ y_2$

distance $= \sqrt{(x_2-x_1)^2+(y_2-y_1)^2}$

$= \sqrt{(-6-4)^2+(4-9)^2}$

$= \sqrt{(-10)^2+(-5)^2} = \sqrt{125}$

$\approx$ 11 units.

41) Andy, Ben and Charlie can separately finish a work in 15 days, 20 days and 12 days each. If they all work together, in how many days will they be able to complete the work

	A	B	C	Together
days	15	20	12	
work/1 day	$\frac{1}{15}$	$\frac{1}{20}$	$\frac{1}{12}$	

Total work (all 3) in 1 day $= \frac{1}{15} + \frac{1}{20} + \frac{1}{12}$

LCM = 60

$= \frac{4}{60} + \frac{3}{60} + \frac{5}{60} = \frac{12}{60}$

$= \frac{1}{5}$

They will finish work in 5 days

42) On tap can fill a canister in 4 hours alone and the other tap can fill the same canister in 6 hours alone. If both the taps are open together, how long will it take to fill the canister?

	A	B	Together
Time	4 Hrs	6 Hrs	
work/1 Hour	$\frac{1}{4}$	$\frac{1}{6}$	

Total tank filled in 1 Hour = $\frac{1}{4} + \frac{1}{6} = \frac{5}{12}$

$\Rightarrow$ It will take $\frac{12}{5}$ = 2 Hrs 24 minutes

43) Pam and Hans can together paint a room in 4 days. If Pam alone can paint the room in 6 days by herself. How many days will Hans take to paint the room alone?

	Pam	Han	Together
days	6	x	4
work/day	$\frac{1}{6}$	$\frac{1}{x}$	$\frac{1}{4}$

$\frac{1}{6} + \frac{1}{x} = \frac{1}{4}$

$\frac{1}{x} = \frac{1}{4} - \frac{1}{6}$

$\frac{1}{x} = \frac{2}{24}$

$x = 12$

Han's will finish work alone in 12 days

44) Andy, Ben and Charlie can together finish a work in 4 days. Andy alone can finish the work in 10 days. Ben alone can finish in 18 days. In how many days can Charlie alone finish the work?

	A	B	C	Together
days	10	18	x	4
work/ days	$\frac{1}{10}$	$\frac{1}{18}$	$\frac{1}{x}$	$\frac{1}{4}$

$\frac{1}{10}+\frac{1}{18}+\frac{1}{x}=\frac{1}{4}$

$\frac{1}{x}=\frac{1}{4}-\left(\frac{1}{10}+\frac{1}{18}\right)$

LCM = 180

$\frac{1}{x}=\frac{45}{180}-\left(\frac{18}{180}+\frac{10}{180}\right)$

$\frac{1}{x}=\frac{45-28}{180}$

$\frac{1}{x}=\frac{17}{180}$

$x\approx 10.58$

$\approx 10\frac{1}{2}$

$10\frac{1}{2}$ days

45) A plane travels 2500 km, 1200 km and 500 km at the rate of 500 km/ hr, 400 km/ hr and 250 km/ hr respectively. Find the average speed of the whole journey.

Average Speed = $\frac{\text{Total distance}}{\text{Total time}}$

Time taken for the 3 parts = $\frac{2500}{500}+\frac{1200}{400}+\frac{500}{250}$

$= 5+3+2$

$= 10$ Hours

Average speed = $\frac{2500+1200+500}{4200\div 10}$

420 km/hour

46) A train 760 m long passes a platform 440m long in 40 seconds. Find the speed of the train in Km/hour.

Total distance Travelled = length (train) + length (Platform)

$= 760+440$

$= 1200\text{ m} = 1.2\text{m}$

Time = 40 Sec $= \frac{40}{3600}$ Hrs $= \frac{1}{90}$ Hrs

Speed = $\frac{\text{distance}}{\text{Time}}$

$= 1.2 \div 1/90 = 1.2\times 90$ Km/hr

108 km/hr.

47) Find the time taken by a train 180 m long, running at 72 km/hour in crossing an electric pole?

Speed = 72 km/hr

distance = 180 m

time = $\frac{\text{distance}}{\text{Speed}}$

Speed = $\frac{72\times 1000}{3600}$ m/sec

$= 20$ m/sec

Time = $\frac{180}{20}$ sec = 9 seconds

9 seconds

48) A sum of $1600 earns a simple interest of $252 in 2 years 4 months. Find the rate of interest per year?

$P = \$1600$
$I = \$252$
$T = 2\text{yrs } 4\text{mths} = 2\ 4/12 = 2\frac{1}{3}$

$I = \frac{PRT}{100}$

$252 = \frac{1600 \times R \times 7}{3 \times 100}$

$252 \times 3 = 16 \times R \times 7$

$R = \frac{252 \times 3}{16 \times 7}$

$R = 6.75\%$

Rate = 6.75%

49) How long will it take for a sum of $12600 invested at 9% per year at simple interest amount to $15,624?

$P = \$12,600$
$R = 9\%$
$A = \$15,624$
$I = \$3,024$

$T = \frac{I \times 100}{PR}$

$T = \frac{3024 \times 100}{12600 \times 9}$

$T = 2.66$
$= 2\ 2/3$

$2\ 2/3$ years.

50) What sum of month will amount to $1199 in 3 years at 12.5% per year simple interest?

$A = \$1199$
$T = 3\text{years}$
$R = 12.5\%$
$P = ?$
$A = P + I$

$A = P + \frac{P \times 12.5 \times 3}{100}$

$A = \frac{100P + 37.5P}{100}$

$A = \frac{137.5P}{100}$

$P = \frac{1199 \times 100}{137.5}$

$P = \$872$

$872

51) In 4 years, $6,500 amounts to $8,840 at a certain rate of interest. In what time will $1,600 amount to $1,816 at the same rate?

Case 1
$P = \$6500$
$A = \$8840$
$T = 4\text{years}$
$P = ?$
$I = \$8840 - \$6500 = \$2340$

$R = \frac{2340 \times 100}{6500 \times 4}$

$R = 9\%$

Case 2
$R = 9\%$
$A = \$1816$
$P = \$1600$
$I = \$216$

$T = \frac{216 \times 100}{1600 \times 9}$

$T = 1.5\text{years}$

$1\frac{1}{2}$ years

52) **Simplify:** $\left[\left(\frac{5}{9}\right)^{-3} \times \left(\frac{3}{5}\right)^{-3}\right] \div \left[\left(\frac{9}{5}\right)^{3} \times \left(\frac{5}{3}\right)^{3}\right]$

$= \left[\left(\frac{5}{9} \times \frac{3}{5}\right)^{-3}\right] \div \left[\left(\frac{9}{5} \times \frac{5}{3}\right)^{3}\right]$

$= \left(\frac{1}{3}\right)^{-3} \div (3)^{3}$

$= (3)^{3} \div (3)^{3}$

$= 1$

$\boxed{1}$

53) **Simplify:** $\left(\frac{-2pq^2}{3p^3q^4}\right)^{-2} \times \left(\frac{6p^2}{q^4}\right)$

$= \left(\frac{-2}{3p^2q^2}\right)^{-2} \times \left(\frac{6p^2}{4}\right) = \left(\frac{9p^4q^4}{4} \times \frac{6p^2}{q^4}\right)$

$\boxed{= \frac{27}{2}p^6}$

54) **Expand:** $\left(7p^2 + \frac{3}{2}q^2\right)^2$

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

$= (7p^2)^2 + 2(7p^2)\left(\frac{3}{2}q^2\right) + \left(\frac{3}{2}q^2\right)^2$

$= 49p^4 + \frac{9}{4}q^4 + 21p^2q^2 \Rightarrow 49p^4 + 21p^2q^2 + \frac{9}{4}q^4$

55) **Expand:** $\left(\frac{1}{3}x - 3y\right)^2$

$= \left(\frac{1}{3}x\right)^2 - 2\left(\frac{1}{3}x\right)(3y) + (3y)^2$

$= \frac{1}{9}x^2 - 2xy + 9y^2$

$\boxed{\left(\frac{1}{9}\right)x^2 - 2xy + 9y^2}$

56) The total cost of 3 tables and 2 chairs is \$745. If a table cost \$40 more than a chair, find the price of each?

	Table	Chair
#	3	2
cost/each	$(x+40)$	(x)
Total Cost	$3(x+40)$	$2x$

$3(x+40) + 2x = 745$

$3x + 120 + 2x = 745$

$5x = 745 - 120$

$x = 125$

Cost/Chair = \$ 125

Cost/Table = \$ 165

57) Find the value using the square identities(do not do actual calculation)

57 * 63

$= (60-3)(60+3)$

$= (60)^2 - (3)^2$

$= 3600 - 9$

3591

84 * 96

$= (90-6)(90+6)$

$= (90)^2 - (6)^2$

$= 8100 - 36$

8064

58)

8.2 * 7.8

$(8+0.2)(8-0.2)$

$= (8)^2 - (0.2)^2$

$= 64 - 0.04$

63.96

6.5 * 7.5

$= (7-0.5)(7+0.5)$

$= (7)^2 - (0.5)^2$

$= 49 - 0.25$

48.75

59) What should be added to each of the following to make the given algebraic expression a perfect square

a) $4x^2 + 24xy + ?$

$(2x)^2 + 2(2x)(6y) + (6y)^2$ → $36y^2$

b) $a^2 - 14ab + ?$

$(a)^2 - 2(a)(7b) = (7b)^2$ → $49b^2$

c) $9p^2 - 36pq + ?$

$(3p)^2 - 2(3p)(6q) = (6q)^2$ → $36q^2$

d) $9x^2 + 48x + ?$

$(3x)^2 + 2(3x)(8)$ $(8)^2$ → 64

e) $x^2 + x + ?$

$(x)^2 + 2(x)\left(\frac{1}{2}\right)$ $? = \left(\frac{1}{2}\right)^2$ → $\frac{1}{4}$

f) $121a^2 + 154a + ?$

$(11a)^2 + 2(11a)(7)$ $? = (7)^2$ → 49

60) Andy is twice as old as his son. 20 years ago, Andy was 12 times as old as his son. Find their present ages.

	Son	Andy
Present	x	$2x$
20 years ago	$x-20$	$2x-20$

$(2x-20) = 12(x-20)$

$2x - 20 = 12x - 240$

$220 = 10x$

$x = 22$

Son = 22 yrs old

Andy = 44 yrs old

61) A sum of $500 is in the form of $5 and $10 notes. If the total number of notes is 90, find the number of $10 notes

	$5	$10
#(bills)	x	$90-x$
Total value	$5x$	$10(90-x)$

$5x + 10(90-x) = 500$

$5x + 900 - 10x = 500$

$900 - 500 = 5x$

$x = 400/5 = 80$

There are 10 $10 bills

10 bills

62) Solve the simultaneous equations: Find x and y

$4x - 3y = 0$

$-4x + 1y = -8$

$-2y = -8$ Adding

$y = 4$

$4(x) - 3(4) = 0$

$4x = 12$

$x = 3$

$x = 3$ | $y = 4$

63) Solve the simultaneous equations: Find x and y

$8x + 7y = 7$

$10x - 7y = -7$

Adding the two

$18x = 0$

$x = 0$

Substituting $x = 0$ in Equation(I)

$8(0) + 7y = 7$

$7y = 7$

$y = 1$

$x = 0$ | $y = 1$

64) Solve the simultaneous equations: Find x and y

$8x + 6y = 2$

$2x - 6y = 3$

Adding the two Eqn

$10x = 5$

$x = \frac{5}{10}$

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

$8(\frac{1}{2}) + 6y = 2$

$6y = 2 - 4$

$6y = -2$

$y = -1/3$

$x = 1/2$ | $y = -1/3$

65) Solve the simultaneous equations: Find x and y

$x + 3y = 10$

$-(x + y = -2)$

$4y = 12$

$y = 3$

$x - (3) = -2$

$x - 3 = -2$

$x = 1$

$x = 1$	$y = 3$

66) Name all the types of angles formed when two lines are intersected by a transversal

Corresponding	Interior (Consecutive)	Vertical angles
Alternate (interior)	Exterior Alternate	Linear pair

67) Given: $\overrightarrow{NB} \parallel \overrightarrow{CD}$, $\angle M = 100^\circ$

To Find: x

Construct: $MX \parallel NB$

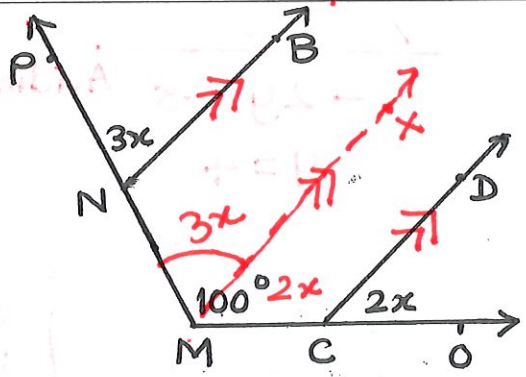
$\angle PNB = \angle PMX = 3x$

$\angle OCD = \angle CMX = 2x$

$3x + 2x = 100$

$5x = 100$ $\quad x = 20$

$x = 20$



68) Given: line p $\parallel$ line q, line l $\parallel$ line m

To Find: x, y, z

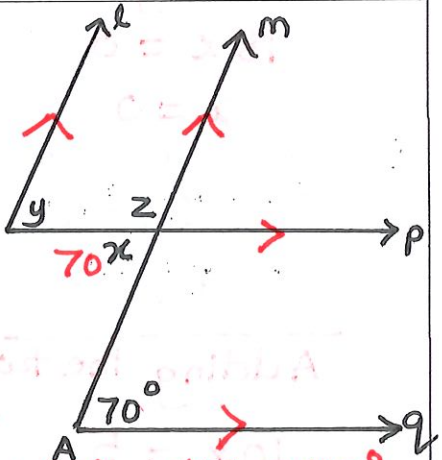
$p \parallel q$ (Given)

$x = 70^\circ$ (Alternate $\angle$s)

$l \parallel m$ $\quad y = x = 70^\circ$ (Alternate $\angle$'s)

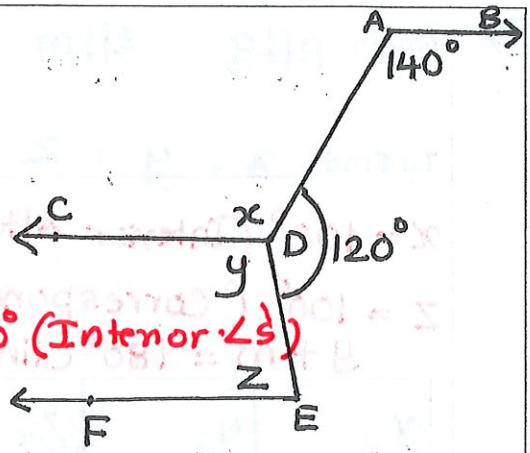
$z = 180 - 70^\circ$ (Interior $\angle$s) $\quad \angle Z = 110^\circ$

$y = 70^\circ$	$x = 70^\circ$	$z = 110^\circ$



69) Given: $AB \parallel CD \parallel EF$

To Find: x, y, z



$x = 140°$ (Alternate $\angle$'s)

$x + y + 120° = 360°$

$140° + y + 120° = 360°$

$y = 100°$

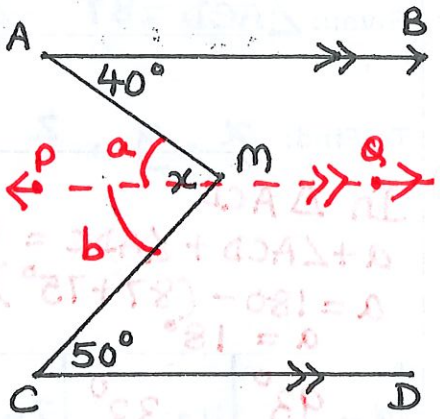
$y + z = 180°$ (Interior $\angle$s)

$z = 80°$

$x = 140°$ | $y = 100°$ | $z = 80°$

70) Given: $AB \parallel CD$

To Find: x



Construct: $PQ \parallel AB$

$\angle a = 40°$ (Alternate $\angle$'s)

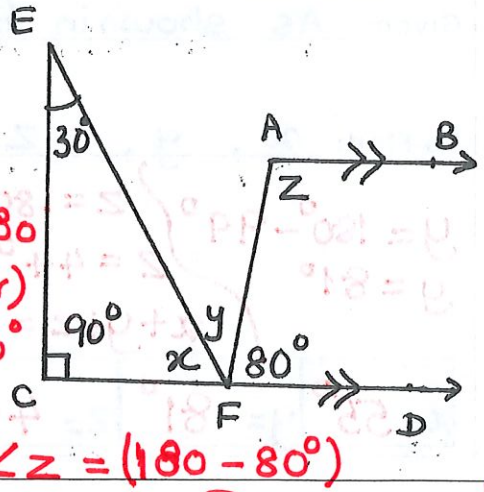
$\angle b = 50°$ (Alternate $\angle$'s)

$x = 90°$

$x = (40 + 50)° = 90°$

71) Given: $\angle E = 30°$, $\overline{BA} \parallel \overline{CD}$

To Find: x, y, z



In Δ ECF,

$90° + 30° + x = 180°$

$x = 60°$

$x + y + 80° = 180°$ (linear pair)

$60° + y + 80° = 180°$

$y = 40°$

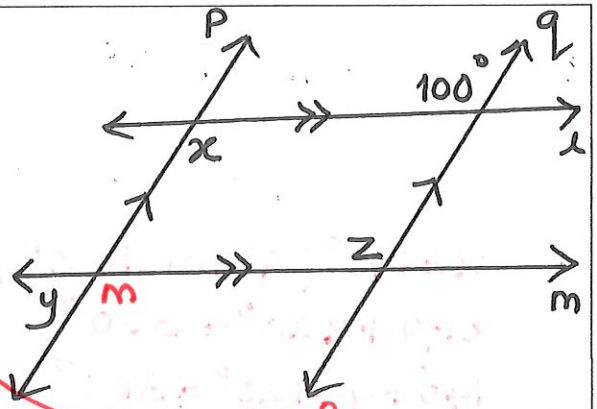
$\angle z = (180 - 80°)$

Interior angles

$x = 60°$ | $y = 40°$ | $z = 100°$

72) Given: $p \parallel q$ $l \parallel m$

To Find: x, y, z



$x = 100^\circ$ (Interior Alternate $\angle$'s)

$z = 100^\circ$ (Corresponding $\angle$'s)

$y + m = 180^\circ$ (linear pair)

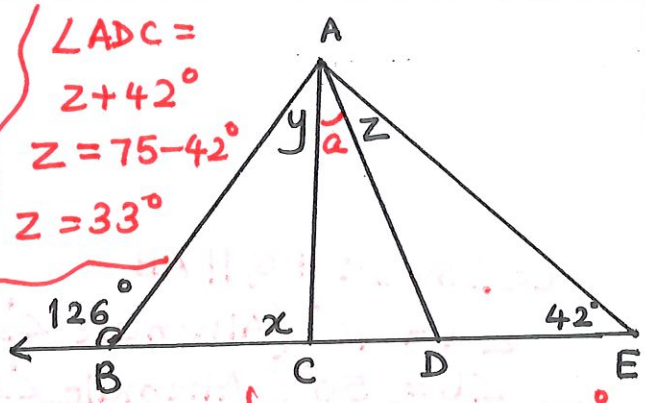
$y = 80^\circ$

$m = 100^\circ$ (Interior Alternate $\angle$'s)

$x =$	$y =$	$z =$

73) Given: $\angle ACD = 87^\circ$ $\angle ADC = 75^\circ$

To Find: x, y, z



In $\triangle ACD$

$a + \angle ACD + \angle ADC = 180^\circ$

$a = 180 - (87 + 75^\circ)$

$a = 18^\circ$

$\angle ADC = z + 42^\circ$

$z = 75 - 42^\circ$

$z = 33^\circ$

$126 = x + y$ (exterior $\angle$'s)

$y = 126 - 93^\circ = 33^\circ$

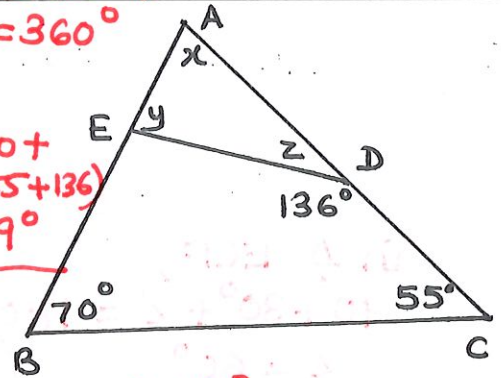
$x = 180 - 87^\circ$

$x = 93^\circ$

$x = 93^\circ$	$y = 33^\circ$	$z = 33^\circ$

74) Given: As shown in figure

To Find: x, y, z



Sum($\square$) $= 360^\circ$

$\angle BED = 360^\circ - (70 + 55 + 136)$

$\angle BED = 99^\circ$

$y = 180^\circ - 99^\circ$

$y = 81^\circ$

$z = 180 - 136^\circ$

$z = 44^\circ$

$x + y + z = 180^\circ$

$x = 180 - (81 + 44)^\circ$

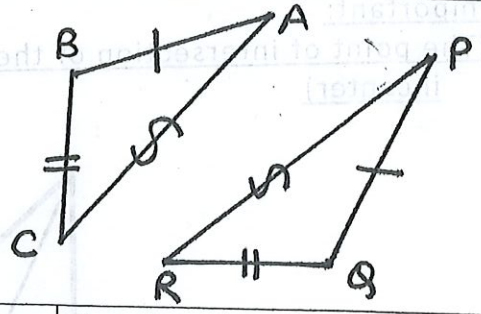
$x = 55^\circ$

$x = 55^\circ$	$y = 81^\circ$	$z = 44^\circ$

75)

Given: As marked in figure

To Prove: $\angle A \cong \angle P$



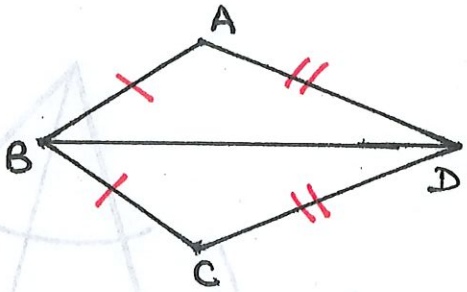
Proof:

	Statement	Reason
1	In $\triangle ABC$ and $\triangle PQR$	
a	$\overline{AB} \cong \overline{PQ}$	Given
b	$\overline{BC} \cong \overline{RQ}$	Given
c	$\overline{AC} \cong \overline{PR}$	Given
2	$\triangle ABC \cong \triangle PQR$	SSS Test
3	$\angle A \cong \angle P$	CPCTC

76)

Given: $\square ABCD$ is a kite

To Prove: $\angle A \cong \angle C$



Proof:

	Statement	Reason
1.	$AB \cong CB$ and $AD \cong CD$	Adjacent sides of a kite
2.	In $\triangle ABD$ and $\triangle CBD$	
a	$\overline{AB} \cong \overline{CB}$	Given
b	$\overline{AD} \cong \overline{CD}$	Given
c	$\overline{BD} \cong \overline{BD}$	common side.
2	$\triangle ABD \cong \triangle CBD$	SSS Test
3	$\angle A \cong \angle C$	CPCTC

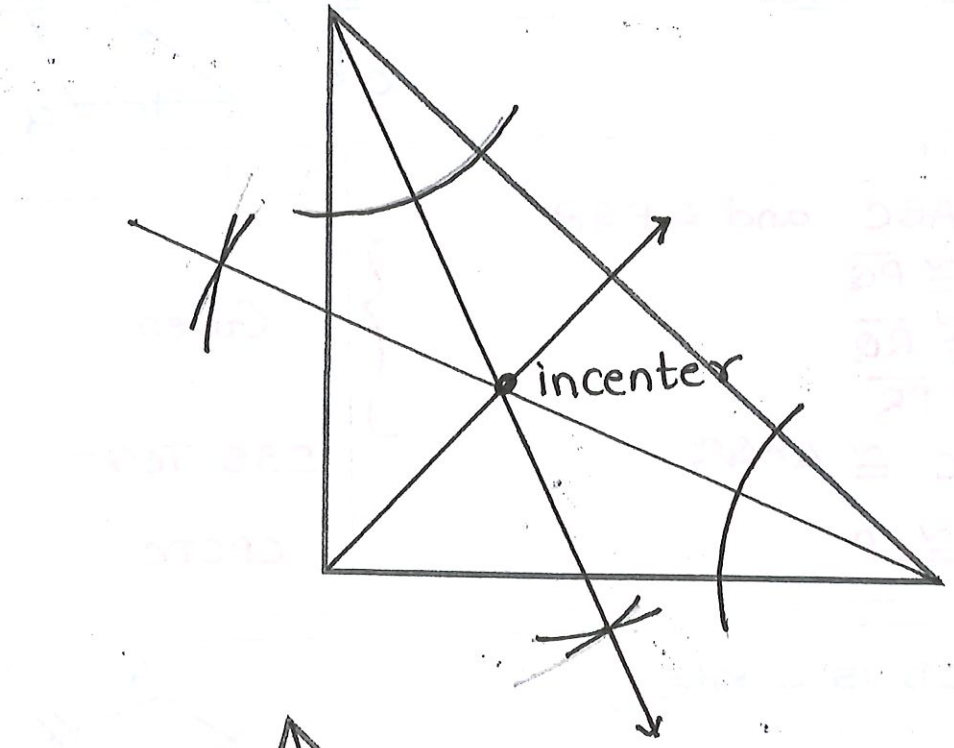
Answer key

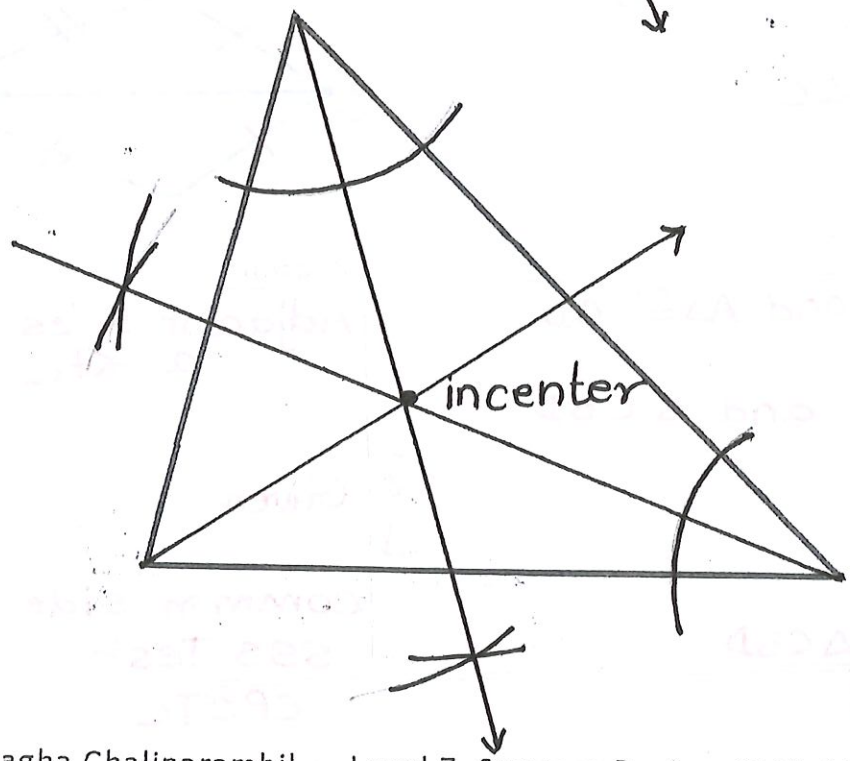
Pg 22

77) Draw the angle bisectors to all the three angles of the given triangles

Important:

(The point of intersection of the angle bisectors of a triangle is called the incenter)



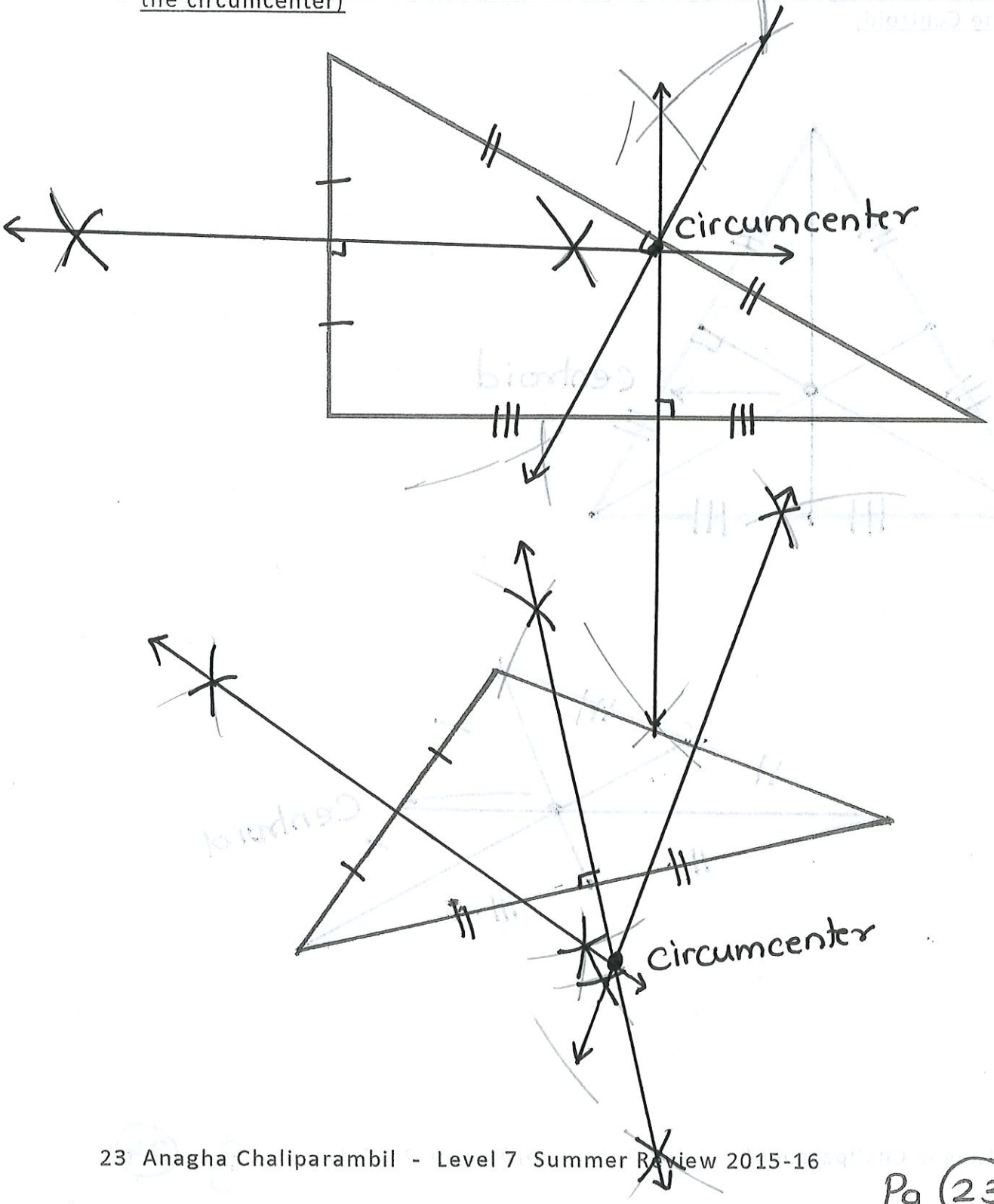


Answer Key

78) Draw the perpendicular bisectors to all the three sides of the given triangles

Important:

(The point of intersection of the perpendicular bisectors of a triangle is called the circumcenter)



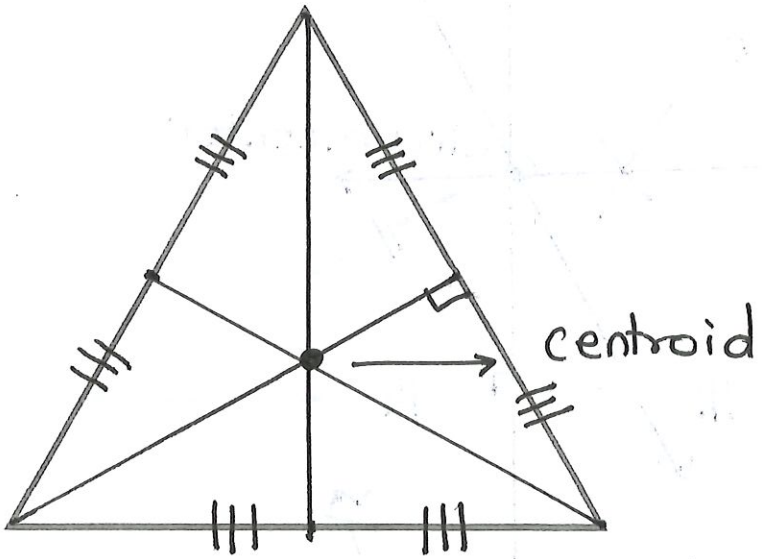
Answer key

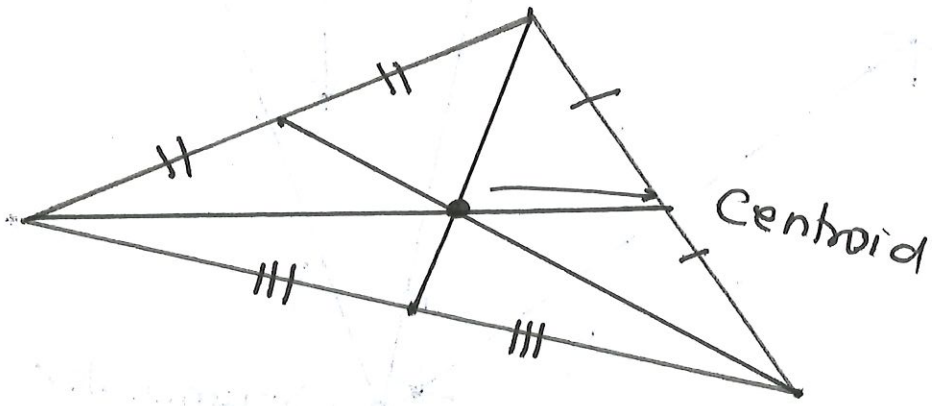
Pg 24

79) Draw the medians to all the three sides of the given triangles

Important:

(A median is a segment joining the vertex of a triangle with the midpoint of the opposite side. The point of intersection of the medians of a triangle is called the Centroid)





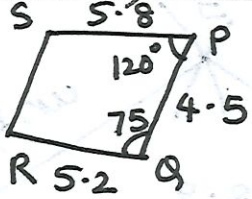
Answer key

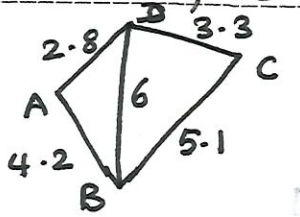
Level 7 Summer Review 2015-16

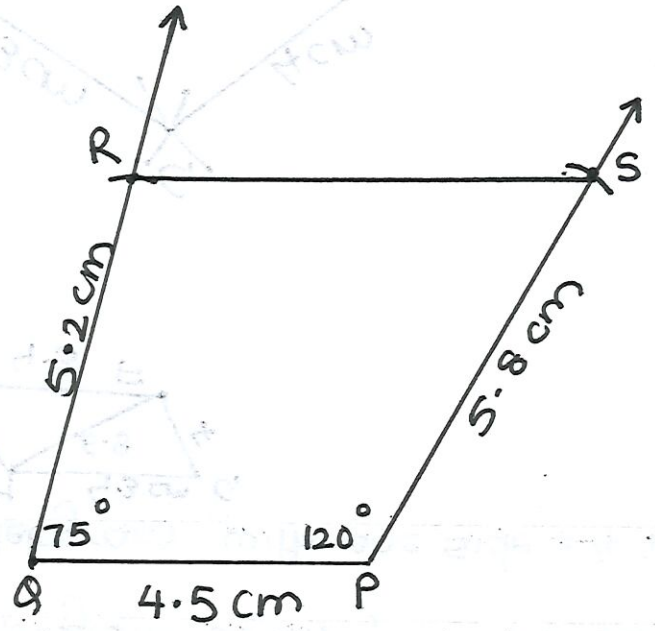
80) Draw the following (Hint: Always draw a rough figure first)

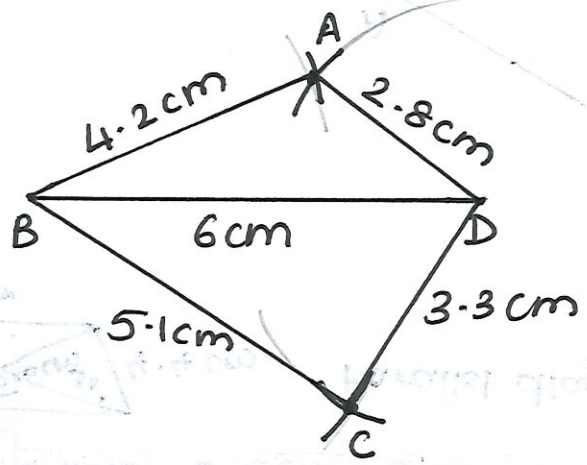
1. $\square PQRS$ such that $PQ = 4.5cm$, $QR = 5.2cm$, $PS = 5.8cm$, $\angle Q = 75^\circ$, $\angle P = 120^\circ$

2. $\square ABCD$, $AB = 4.2cm$, $BC = 5.1cm$, $CD = 3.3cm$, $DA = 2.8cm$, $BD = 6cm$









Pg 25

Pg 25

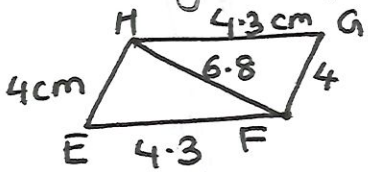
Answer key

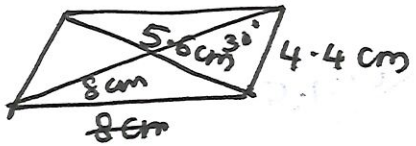
Answer key

81) Draw the following (Hint: Always draw a rough figure first)

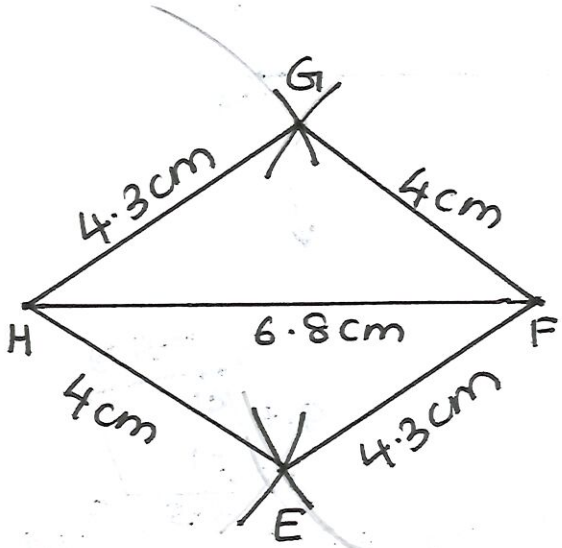
3. Parallelogram EFGH, EF = 4·3cm EH = 4 cm FH = 6·8 cm

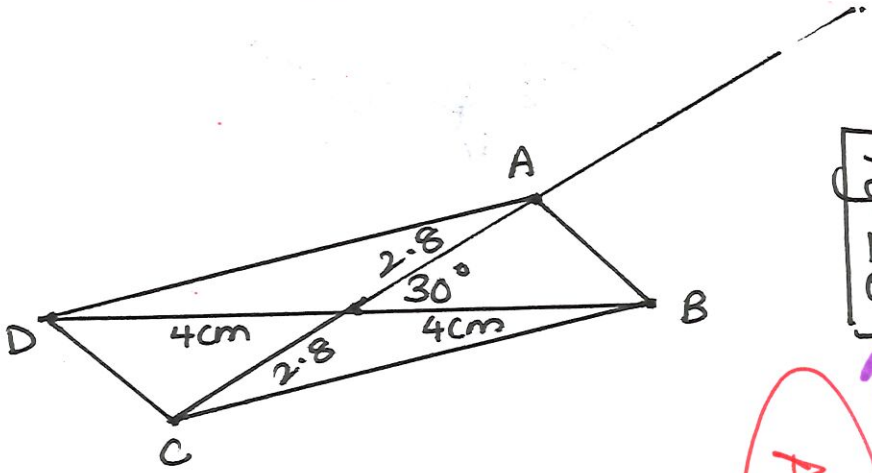
4. Parallelogram, with one side = 4·4cm, diagonals 5·6cm and 8 cm





Parallel diagonal





Pg 26

Pg 26

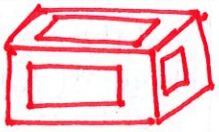
Answer key

82) How many bricks of dimension 22.5 cm by 14 cm by 8 cm are needed to construct a wall 6m long, 3m high and 28cm thick?

$$\#\text{bricks} = \frac{\text{Volume (wall)}}{\text{Volume (each brick)}} = \frac{600 \times 300 \times 28}{22.5 \times 14 \times 8} = 2000$$

2000 bricks

83) Find the volume of wood required to make a closed box of outer dimensions 60 cm by 52 cm by 27 cm with the thickness of wood 3.5 cm?



Volume (wood) = L x H x (thickness of wood)

$= 60 \times 52 \times (27 - 3.5 \times 2)$

$= 60 \times 52 \times (27 - 7)$

$= 60 \times 52 \times 20$

$= 1200 \times 52$

62400 cm^3

84) A path of length 325 m by 30 m is to be laid with concrete up to a depth of 40 cm. find the cost of laying the concrete at a rate of $ 7 per cubic meter

Cost (concreate) = (L x W x H)(Cost/m^3)

$= (325 \times 30 \times 0.4) \times 7$

$= 27300$

$ 27,300

85) How many cube of 3 cm edge can be placed inside a cube of 18 cm edge?

$$\frac{\text{Volume (Large cube)}}{\text{Volume (small cube)}} = \#(\text{cubes})$$

$$\frac{18 \times 18 \times 18}{3 \times 3 \times 3} = 6 \times 6 \times 6 = 216$$

216 cubes

86) What is the total surface area of a right circular cylinder with height 5 cm and diamter 4 cm

Total Surface Area = $2\pi R(R+H)$

$= 2 \times \frac{22}{7} \times 2(2+5)$

$= 2 \times 22 \times 2$

88 cm^2

87) A large cube is formed by using the metal obtained by melting three small cubes of sides 3cm, 4cm and 5cm. What is the ratio of the total surface area of the smallest cube to the total surface area of the large cube

TSA (3cm cube) $= 6(3)^2 = 6 \times 9 = 54\,cm^2$

V(Large cube) = V(3 small cubes) $= (3)^3 + (4)^3 + (5)^3 = 27 + 64 + 125 = 216\,cm^3$

$(6)^3 = 216$

Side(Large cube) = 6 cm

TSA(Large cube) $= 216\,cm^2$

Ratio $= 54 : 216 = \boxed{1:4}$

88) find the mean weight of 50 boys from the following data table

Weight(kg)	50	52	54	56	60
# of boys	6	8	15	14	7

Mean (weight) = $\frac{\text{Total (weight)}}{\text{Total number of boys}}$

$= \frac{(50\times6 + 52\times8 + 54\times15 + 56\times14 + 60\times7)}{6+8+15+14+7}$

$= 54.6$

54.6 kg

89) find the average weight of 40 girls from the following data table

Weight(kg)	27	28	29	30	31
# of girls	6	12	10	8	4

Average $= \frac{(27\times6 + 28\times12 + 29\times10 + 30\times8 + 31\times4)}{40}$

$= \frac{162+336+290+240+124}{40}$

$= 28.8$ kg

28.8 kg

90) An equilateral triangle and a regular hexagon each have perimeter 12 units. The area of the hexagon is what percent of the area of the triangle?

P = 12cm, Side = 4cm

P = 12cm, Side (Hex) = 2cm

$A(\text{eq }\Delta) = \frac{\sqrt{3}}{4}s^2 = \frac{\sqrt{3}}{4}\times4\times4 = \boxed{4\sqrt{3}\,cm^2}$

$A(\text{Reg Hex}) = \frac{3\sqrt{3}}{2}(2\times2) = 6\sqrt{3}\,cm^2$

$A(\text{Hexg}) : A(\text{eq}\Delta) = 6\sqrt{3} : 4\sqrt{3} = 3:2$

150%

Area (Eq Δ) $= \frac{\sqrt{3}}{4}(s)^2$ A(Regular Hexagon) $= \frac{3\sqrt{3}}{2}(s)^2$

Printable 8th grade math test

Name _____ Date: _____

Solve the following problems

1.

a. $5^7 \times 5^{-10} =$ $(5^7)/(5)^{10} = \frac{1}{(5)^3} = \boxed{\frac{1}{125}}$

A. 1/3 B. 5^{-2} C. 1/125 D. 5^{-17}

2.

If $2x^3 = 54$, what is x? $x^3 = 27$, $x = \sqrt[3]{27} = 3$

A. 1 B. 5 C. 2 D. 3

3.

a. The answer for 20000000 × 3.5 × 1000000 in scientific notation is $= 2 \times 10^7 \times 3.5 \times 10^6 = 7 \times 10^{13}$

(Hint: put 20000000 and 1000000 in scientific notation first)

A. 7×10^{13} B. $3.5 \times ^{13}$ C. 2×10^{13} D. 7×10^{12}

b. 0.0004 × 4000 as a decimal is 1.6 and as a fraction is $1\frac{3}{5}$ $0.0004 \times 4000 = 0.4 \times 4 = 1.6 = 1\frac{6}{10}$

4.

a. Which set contains only rational numbers?

A. { √(49), √(7), 1/2, 9/5} → $\sqrt{7}$ is irrational

B. { √(121), 12/5, √(169), 0.333333333333}

C. { 4 × √(5), 2 , √(100), 0} D. 0

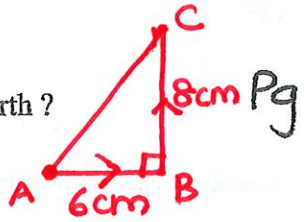
→ $\sqrt{5}$ is irrational

b. Pull out all the irrational numbers from each set above and write them down here.

$\sqrt{7}$, $4 \times \sqrt{5}$

5.

To go to school, you have to walk 6 miles east and then 8 miles north ?



Pg (29)

a. Draw a figure representing your path from home to school

b. Draw a line representing the shortest distance you could have taken. Then, calculate this distance

10m $AC^2 = 8^2 + 6^2 = 64 + 36$

6. $AC^2 = 100$ $AC = 10$

The formula for the area of a circle is shown below

$A = pi \times r^2$ $r = \sqrt{\frac{A}{\pi}}$

a. Which of the following is the correct expression for r or the radius in terms of A and pi?

A. $r = \sqrt{(A / 2pi)}$ B. $r = \sqrt{(2A / pi)}$ C. $r = \sqrt{(pi / A)}$ (D.) $r = \sqrt{(A / pi)}$

b.Use the correct formula you found in part a and pi = 3 to find r when A = 48 square feet.

r = 4 $r = \sqrt{\frac{48}{3}} = \sqrt{16} = 4$

7.

A company charges a flat fee of 1500 dollars to rent a yacht. In addition, renters must pay 100 dollars per hour.

a. Which equation shows the cost C to rent a yacht for h hours?

A. $C = 100 + 1500 \times h$ B. $C = 1500 \times h$ (C.) $C = 100 \times h + 1500$ D. $C = 100 \times h + 1500 \times h$

b. How much would it cost you to rent a yacht for 5 hours? $C = 100 \times 5 + 1500 = 2000\$$

c. What is the slope of the cost? what is the y-intercept? Slope = 100, Yintercept = 1500

d. Using the answers for c, graph the cost on the coordinate system.

8. 1st Escalator (slope) = Rise/Run = 3/2

Escalator 1 has a rise of 6 and a run of 4. Escalator 2 has a rise of 12 and a run of 6. Do the escalators have the same slope? Explain with math computation. 2nd Escalator slope = 2 (Not the same slope)

9. Area(small sq) = s^2 A(larger sq) = $(3s)^2 = 9s^2$

Celita has a garden shaped like a square. How does the area changes if she triples the length of each side?

A. The area of the garden is tripled B. The area of the garden is nonupled C. halved (D.) sextupled

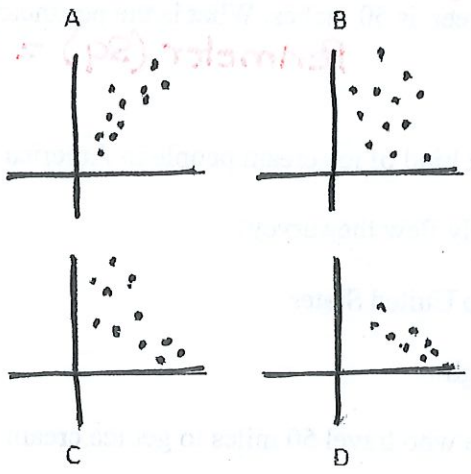
10. Volume = $\frac{1}{3}\pi R^2 H = \frac{\pi \times 8 \times 8 \times 3}{3} = 64\pi$

Find the volume of a cone with a radius of 8 inches and a height of 3 inches.

(Hint: Use $v = 1/3 (pi \times r^2 \times h)$

11.

Pg 30



a. Look at the figure above and then tell which graph(s) show the following correlation.

Positive correlation. A
Negative correlation C
No correlation B

b. What kind of correlation is the following situation?

Number of gallons of gas in your car and the distance you can travel Positive

Number of oranges you can eat and your height No correlation

Number of students going to a concert and the revenue generated. Positive

c. If a scatter plot shows a negative correlation, which line of best fit could represent the scatter plot?

A. $y = x - 5$ B. $y = -1000x + 5000$ C. $y = 100x - 7$ D. $y = 5$

12. $y = mx + b \Rightarrow y = \frac{3}{5}x + 2 \Rightarrow 5y = 3x + 10$

$5y - 3x = 10$

What is the equation of a line that has a slope of 3/5 and a y-intercept of 2?

A. $5y - 3x = 10$ B. $5x - 3y = 10$ C. $5y + 3x = 10$ D. $5x + 3y = 10$

13.

Triangle ABC has vertices (1,1), (3,5), and (5, 3). This triangle is dilated by a factor of 3. What are the images of the 3 vertices. Graph ABC and the image A'B'C'

$\Delta A'B'C'$ vertices are $(3,3)$ & $(9,15)$ & $(15,9)$

Pg (31)

14.

diagonal = $\sqrt{2}$(side) = $25\sqrt{2}$

The diagonal of a square computer screen is 50 inches. What is the perimeter of this TV? $100\sqrt{2}$ inches

Perimeter (Sq) = $100\sqrt{2}$

15.

100 students take a survey to see what kind of ice cream people in America like to eat.

Which of the following will most likely flaw the survey?

A. Some students were not born in the United States

B. The students were not young enough

C. The survey may not include people who travel 50 miles to get ice cream

D. Choose students from a variety of schools.

16.

Which statement shows the similarity between the following 2 graphs?

$4y = 2x + 0.5$ and $4y = 5x + 1/2$

$4y = 2x + 0.5$
$4y = 5x + 1/2$ same

A. The y-intercepts are the same

B. The graphs are identical

C. The x-intercepts are the same

D. The slopes are the same

17.

Below are 3 equations

1) $4x - 2x + 1 = -1 + 2 + 2x$ $\Rightarrow$ $2x + 1 = 1 + 2x$ (Infinite solutions)

2) $2x - 2 = 6 - 4 + 4x$ $\Rightarrow$ $2x - 2 = 2 + 4x \Rightarrow -4 = 2x$ $x = -2$ (one solution)

3) $5 + 3x = 2 + 3x + 5$ $\Rightarrow$ $5 + 3x = 2 + 3x + 5$ (No solution)

Solve all equations and then say

Which equation has 1 solution 2nd eqn, 2 solutions _____, infinitely many solutions 1st equation

18.

Solve for x. $\frac{8}{6} = \frac{4}{x} \Rightarrow x = 3$ feet

Pg 32

A tree is 8 feet tall and cast a shadow that is 6 feet. a. If your child's height is 4 feet, which equation can you use

to find the length of his shadow?

A. 8/5 = 6/x **B.** 4/6 = x/8 **C.** 8/4 = 6/x **D.** x/4 = 8/6

b. What is the length of the shadow? 3 feet

19.

Solve the following silmultaneous equations.

$2x + 4y = 8$

$4x - 4y = 6$

a. by graphing

b. algebraically

$2x = 8 - 4y$

$x = 4 - 2y$

x	4	0	2
y	0	2	1

$2x - 2y = 3$

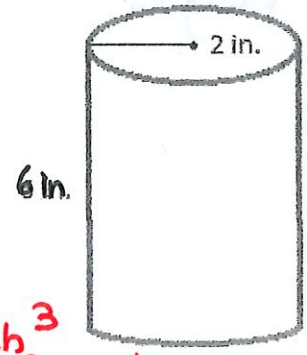
$2x = 3 + 2y$

$x = \frac{3+2y}{2}$

x	2.5	1.5	0.5
y	1	0	-1

20.

The cup below is 2/3 full. How much water can the cup hold? _____



$H = 6$ inch

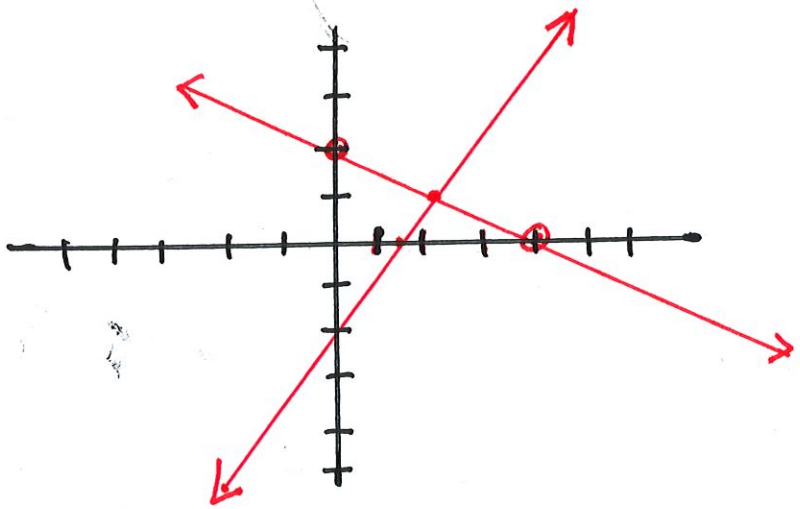
$R = 2$ inch

$V(\text{water}) = \frac{\pi R^2 H \times 2}{3}$

$= \frac{\pi \times 2 \times 2 \times 6 \times 2}{3}$

$= 16\pi$ inch^3 of water

(19)



Pg 33

Continued to Next page

Contd to next page ⇒

Solve the following system of equations (Use any method)

Column 1	Column 2	Column 3
$2x+y=20$ (Eq I) $6x-5y=12$ (Eq II) $y=20-2x$ $-5y=12-6x$ (Eq II) $-5y=-100+10x$ (Eq I) Equalizing the two equations $12-6x=-100+10x$ $112=16x$ $x=\frac{112}{16}$ $x=7$ $2x+y=20$ $14+y=20$ $y=6$ $(7,6)$	$-3x-4y=2$ (Eq I) $3x+3y=-3$ (Eq II) Adding the two Equations $-3x-4y=2$ $3x+3y=-3$ $-y=-1$ $y=1$ $-3x-4y=2$ $-3x-4=2$ $-3x=6$ $x=-2$ $(-2,1)$	$-2x+6y=6$ (Eq I) $-7x+8y=-5$ (Eq II) (Eq I) x 4 − (Eq II) x 3 $-8x+24y=24$ $-21x+24y=-15$ $+\quad -\quad\quad +$ $13x=39$ $x=3$ $-2(3)+6y=6$ $-6+6y=6$ $6y=12$ $y=2$ $(3,2)$

pg (35)

Solve the following system of equations (use any method)

Column 1	Column 2	Column 3
$-3x+3y=4$ (Eq I) $-x+y=3$ (Eq II) (Eq I) − [Eq II × 3] $-3x+3y=4$ $\mp 3x \pm 3y = \mp 9$ $0 = -5$ That is not possible This system of equations does not have a solution No solution	$-3x+3y=3$ (Eq I) $-5x+y=13$ (Eq II) (Eq I) − (Eq II) × 3 $-3x+3y=3$ $+15x-3y=-39$ $12x=-36$ $x=-3$ Substituting $x=-3$ in Eq (I) $-3x-3+3y=3$ $9+3y=3$ $3y=-6$ $y=-2$ $(-3, -2)$	$6x+6y=-6$ $5x+y=-13$ $x+y=-1$ $-5x+y=-13$ $-4x=12$ $x=-3$ $x+y=-1$ $-3+y=-1$ $y=+2$ $(-3, 2)$

Pg (36)

Solve the following system of equations

Column 1	Column 2	Column 3
$-2x-y=-9$ (Eq I) $5x-2y=18$ (Eq II) (Eq I) $\times 2$ $-$ (Eq II) $-4x-2y=-18$ $-\ 5x+2y=18$ $-9x=-36$ $x=4$ $-2(4)-y=-9$ $-8-y=-9$ $-y=-9+8$ $-y=-1$ $y=1$ $(4,1)$	$y=5x-7$ $-3x-2y=-12$ $y=5x-7$ $2y=-3x+12$ $y=\frac{-3x+12}{2}$ Solving these two equations $5x-7=\frac{-3x+12}{2}$ $10x-14=-3x+12$ $13x=26$ $x=2$ $y=5\times2-7$ $y=3$ $(2,3)$	$-5x+y=-2$ (Eq I) $-3x+6y=-12$ (Eq II) $-3x+6y=-12$ Dividing by 3 $-x+2y=-4$ (Eq II) $-10x+2y=-4$ (Eq I) $+\ -\ +$ $+9x=0$ $x=0$ $-5(0)+y=-2$ $0+y=-2$ $y=-2$ $(0,-2)$

pg (37)

Solve the following system of equations

Column 1	Column 2	Column 3
$-3x-4y=2$ $3x+3y=-3$ Adding the two Equations $-3x-4y=2$ $3x+3y=-3$ $-y=-1$ $y=1$ $-3x-4y=2$ $-3x-4=2$ $-3x=6$ $x=-2$ $(-2, 1)$	$-2x+6y=6$ (Eq I) $-x+y=-5$ (Eq II) Eq(I) $\div 2$ $-x+3y=3$ $-x+y=-5$ (Eq II) Subtracting them $+2$ $2y=8$ $y=4$ $-x+y=-5$ $+4$ $-x=-2=-5$ $-x=-5+2$ $-x=-3$ $x=3$ ~~$(3,-2)$~~ $(9, 4)$	$-5x-8y=17$ (Eq I) $-7y+2x=-17$ (Eq II) $7y-2x=17$ $-8y-5x=17$ $7y-2x=-8y-5x$ $7y+8y=-5x+2x$ $15y=-3x$ $x=-5$ $-5(-5)-8y=17$ $25-8y=17$ $25-17=8y$ $8=8y$ $y=1$ $(-5, 1)$

Pg (38)

61 How many different ways can you arrange the letters in the word "MISTAKES"

(8 letters) S repeats

$= \frac{8!}{2!} = \frac{8 \times 7 \times 6 \times 5 \times 4 \times 3 \times 2 \times 1}{2}$

$= 20160$

20160 ways

62 $(2x-3y)^2 = (2x)^2 + (3y)^2 - 2(2x)(3y)$

$= 4x^2 + 9y^2 - 12xy$

$4x^2 + 9y^2 - 12xy$

63 $\left(2x + \frac{1}{x}\right)^2 = (2x)^2 + \left(\frac{1}{x}\right)^2 + 2(2x)\left(\frac{1}{x}\right)$

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

$= 4x^2 + (1/x^2) + 4$

64 $(5m-y)(5m+y) = (5m)^2 - (y)^2$

$= 25m^2 - y^2$

$25m^2 - y^2$

65 The volume of a cylinder is 1650 cu.cm. find its height if the diameter of the base is 5 cm. (take $\pi = \frac{22}{7}$)

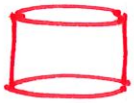
Volume (cylinder)

$= \pi R^2 H$

$1650 = \frac{22}{7} \times \frac{5}{2} \times \frac{5}{2} \times H$

$H = \frac{1650 \times 7 \times 2 \times 2}{22 \times 5 \times 5}$

$H = 84$



84 cm

7/Pg 39

66 A certain sum of money invested at simple interest amounts to $1260 in 2 years and $1350 in 5 years. What is the interest earned in 1year?

	Case1	Case 2
P		
R		
T	2yrs	5yrs
I		
A	$1260	$1350

Interest in 3years
$= 1350 - 1260$
$= \$ 90$

Interest (1year)
$= \$ \frac{90}{3}$
$= \$30$

$ 30

67 The surface area of a cube is 384 sq.cm. What is the volume of the cube?

S.Area (Cube)
$= 6(s)^2$

$6s^2 = 384$

$s^2 = (384)/6$

$s^2 = 64$

$s = 8$ cm

$V(\text{cube}) = s^3$
$= 8 \times 8 \times 8$

512 cm^3

68 Write as a decimial and state what kind of a decimal it is?

$\frac{19}{11}$

$$
\begin{array}{r}
1.7272 \\
11\overline{)19.000} \\
-11 \\
\hline
80 \\
-77 \\
\hline
30 \\
-22 \\
\hline
80 \\
-77 \\
\hline
30 \\
-22 \\
\hline
80
\end{array}
$$

$8 = 1.\overline{72}$

Recurring decimal

When Amanda sold his condo at $92,000 he made a profit of 15%, what was the cost price of the condo?

SP = $92,000
P% = 15 %
CP = x

$\frac{115}{100} x = 92000$

$x = \frac{92000 \times 100}{115}$

$x = \frac{4000 \times 20}{}$

$x = 80000$

C.Price (condo)

$ 80,000