1. Change the following Roman numerals into modern Hindu-Arabic numerals:

   (a) MMCXLIX

   (b) CXXXIII

   (c) MMMDCCCLXXIV

2. (a) Find the difference of 73 and 22.

   (b) Find the product of 33 and 19.

   (c) Find the sum of 3456 and 6435.

   (d) Find the quotient of 1032 and 43.

3. Evaluate:

   (a) $21 - 12 \div 4$

   (b) $81 - (13 - 83) \times 2$

   (c) $629 - 7 \times 6 + 108 \div 6$

   (d) $\sqrt{169} - \sqrt{36}$

   (e) $11 + 3^4$

   (f) $\dfrac{155 - 465}{31 \times 5}$

   (g) $271\,936 \div 56$

   (h) $14\,171 \div 18$

4. (a) Write down all the factors of 34.

   (b) Write down all the factors of 120.

   (c) Write down the HCF of 34 and 120.

5. Find the LCM of:

   (a) 10 and 12

   (b) 10 and 7

   (c) 7, 10 and 12

6. Write down all the prime numbers between 1 and 50.

7. What is the 9th triangular number?

8. What is the 8th Fibonacci number?

9. What is the 35th square number?

10. Use the following list of numbers in this question:

    11, 30, 32, 45, 80, 275, 288, 600, 900, 3168.

    From the list write down the numbers that are divisible by:

    (a) 25   (c) 2   (e) 9   (g) 11
    (b) 3   (d) 5   (f) 4   (h) 8

11. Find the HCF of 1092 and 1320

12. Find the LCM of 1400 and 24500

13. Evaluate:

    (a) $\sqrt{38\,025}$

    (b) $\sqrt[3]{4\,492\,125}$

14. If $n = -2$ and $m = 6$, evaluate:

    (a) $\dfrac{5n}{m}$

    (b) $3nm - (2m - n)$

    (c) $8nm^2$

    (d) $\dfrac{-7m}{4n}$

15. Simplify:

    (a) $9x + 23x$

    (b) $78pt - 5p - 21p + 3t - 301pt$

    (c) $6a + 19b + 12c - 35a - 16b - 14c - 54b + 101a + 27c$

    (d) $33 \times -p \times -q$

    (e) $x^3y \times -8xy^4 \times 22x^5y^6$

    (f) $(-2bc^2)^5$

    (g) $\dfrac{92a^8b^7c^2d}{24a^{14}b^5c^5d^2}$

    (h) $\dfrac{9m^6n}{-12mn^2} \div -\dfrac{18m^5n^3}{16m^7n^8}$

16. Expand and simplify:

    (a) $7 + 9(a + 3)$

    (b) $6m - (m + 11)$

    (c) $7(x + 8) + 6(x - 3)$

    (d) $5(a - 4) - 4(a - 12)$

    (e) $-(x + 4) - 2(x - 8)$

17. The local movie theatre sells popcorn in small, medium and large containers. The small size costs \$1 less than the medium size, and the large size costs twice as much as the medium size. A group of friends go to the movies and decide to buy one container of each size, and they pay \$13. How much does a medium-size popcorn cost?

18. Solve the following equations:

    (a) $7m + 8 = 43$

    (b) $5a + 12 = 17 - 8a$

    (c) $8(x - 5) = 39$

    (d) $4(p - 3) = 9(3p + 8)$

    (e) $11(a + 9) - 5(a - 4) = 57$

19. Solve the following equations:

    (a) $p - 8 = \dfrac{p}{3}$

    (b) $\dfrac{1}{5}(3b - 4) = 9 - b$

    (c) $\dfrac{3(a + 2)}{8} - \dfrac{7(2 + a)}{9} = 5a$

20. Cancel the following fractions to lowest terms:

    (a) $\dfrac{4}{12}$ (b) $\dfrac{5}{10}$ (c) $\dfrac{6}{24}$

21. Simplify:

    (a) $\dfrac{6}{7} + \dfrac{8}{9}$ (b) $\dfrac{5}{6} + \dfrac{1}{3} - \dfrac{3}{5}$

22. Evaluate

    (a) $5 - 1\frac{1}{2} + \frac{5}{8}$

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

    (c) $2\frac{3}{4} + 9\frac{1}{2} + 1\frac{3}{4}$

    (d) $2\frac{1}{3} - \frac{3}{4} + 1\frac{2}{3}$
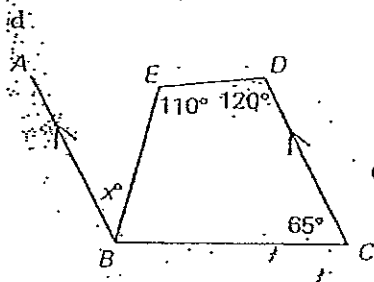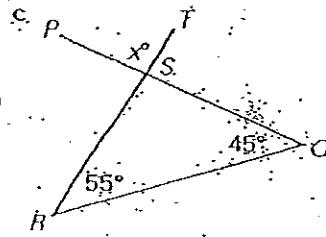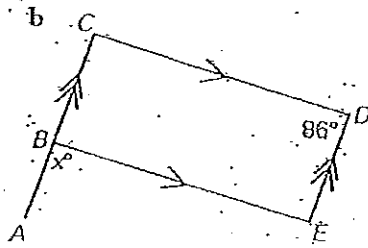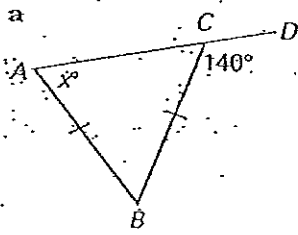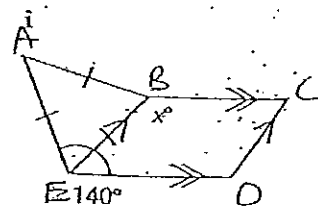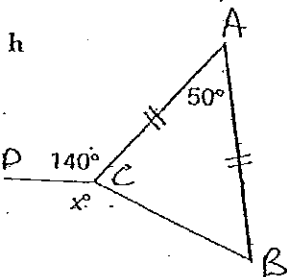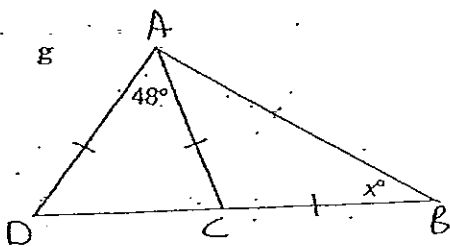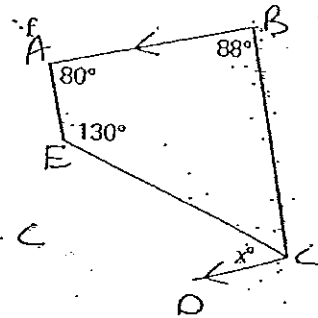
    (e) $\dfrac{5}{12} \times \dfrac{3}{14}$

    (f) $\dfrac{5}{12} \div \dfrac{3}{4}$

    (g) $3\frac{7}{8} \div \frac{1}{4}$

    (h) $1\frac{1}{4} \times 2\frac{1}{8}$

23. Find the value of each pronumeral, giving reasons.

a

b

c

d

e

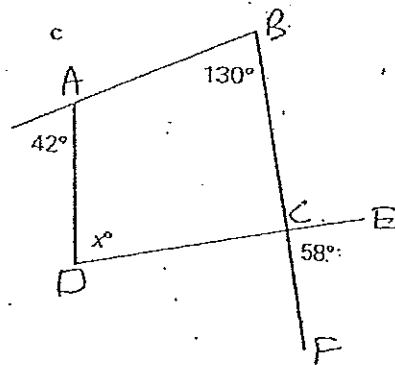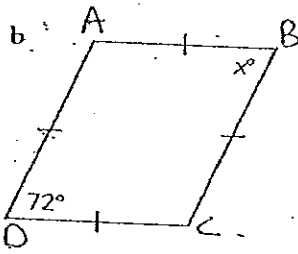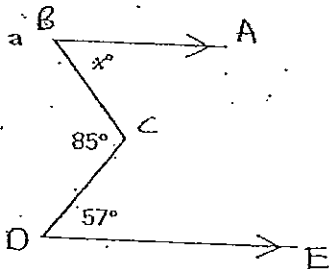
f
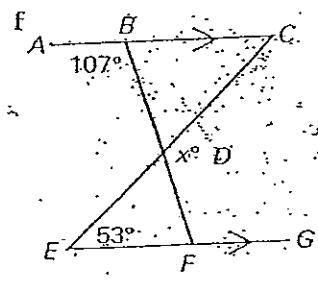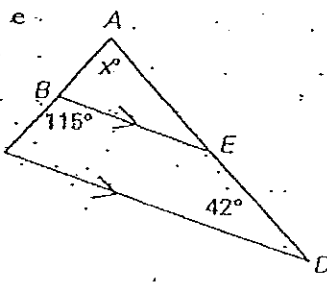
24. Find the value of each pronumeral, giving reasons.

a

b

c

d

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h

i
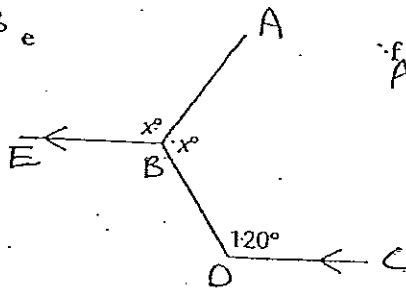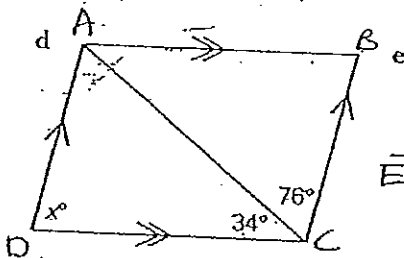
25. The names of Arthur, Matthew, Christine, Anna, Donald and Emma are put in a hat and one name drawn out. What is the probability that:

(a) a girl is chosen

(b) a boy is chosen

(c) Christine is chosen

(d) Matthew is not chosen?

26. A box of confectionery contains 35 lollies wrapped in red paper, 45 wrapped in yellow paper and 20 wrapped in green paper. What is the probability of a randomly chosen lolly being:

(a) red

(b) not green?

27. Evaluate:

(a) $3\cdot4 + 2\cdot8$

(b) $0\cdot4 + 0\cdot6 - 0\cdot3$

(c) $17\cdot307 + 416\cdot102 + 31\cdot03$

(d) $0\cdot07 \times 10$

(e) $1\cdot9 \times 10^2$

(f) $0\cdot025 \times 100$

(g) $3\cdot1 \times 1\cdot3$

(h) $(0\cdot4)^3$

(i) $0\cdot459 \div 9$

(j) $1\cdot4 \div 0\cdot005$

(k) $1\cdot28 \div 0\cdot4$

(l) $\sqrt{(0\cdot04)}$

28. Convert each to a percentage:

(a) $\dfrac{1}{2}$

(b) $\dfrac{7}{8}$

(c) $\dfrac{4}{7}$

(d) $\dfrac{9}{8}$

(e) $\dfrac{1}{47}$

29. Evaluate:

(a) 30% of 150L

(b) 115% of $2000

(c) 17.8% of 40s

(d) 316% of 56km

30. (a) Increase 45g by 14%　　　　　　　(c) Increase 9m by 27%

　　(b) Decrease 54s by 10%　　　　　　　(d) Decrease 17L by 18%

31. Michael bought a car for $27 500. Two years later he sold the car for $18 000.

　　(a) Did Michael make a profit or loss?

　　(b) Write the profit or loss as a percentage of the original price.

32. A salesperson received $70.14 commission for $1002 worth of monthly sales. What was the salespersons commission as a percentage?

33. Write down the next four numbers of these patterns:

　　(a) $13, 21, 29, 37...$

　　(b) $19, 25, 44, 69...$

34. Copy and complete each table using the formula given. Then plot the points on a seperate number plane and join them to draw the graph of the rule.

　　(a)

$$y = x - 4$$

x	-1	0	1	2
y				

　　(b)

$$y = 9x - 8$$

x	-1	0	1	2
y				

35. Find the rules that would give the following table of values:

　　(a)

x	0	1	2	3
y	-5	-3	-1	1

　　(b)

a	4	5	6	7
b	43	52	61	70

　　(c)

p	5	9	13	17
t	25	-23	-71	-119

　　(d)

x	0	1	2	3
y	-8	-6	8	46

36. Find the area of each of these regions:

(a)

6 cm
3 cm
1 cm
2 cm
4 cm

(c)

12 cm
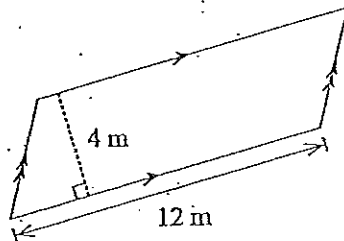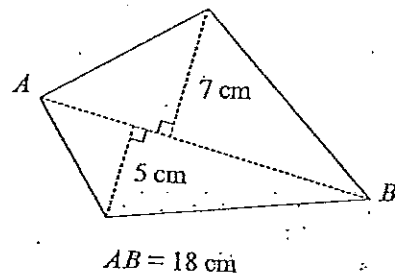7 cm
4 cm
6 cm

(b)

4 m
12 m

(d)

A   7 cm
5 cm
B
$AB = 18$ cm
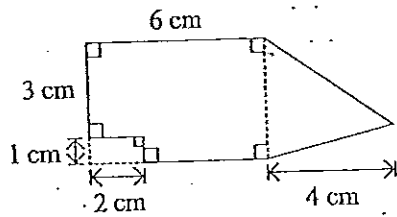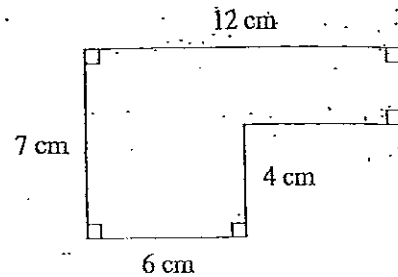
37. What is the volume of a rectangular fish tank with dimensions 90 cm, 45 cm and 60 cm?

38. If each of 37 students in 24 classes ate 5 pies in one week, how many pies were eaten in total?

39. The cost of 20 packets of chips is $9.50, while each packet costs 65 cents when sold idividually. If you want to buy 40 packets of chips, which option is cheaper? How much do you save by taking the cheaper option?

40. What is the smallest number that must be subtracted from 34 657 so that the result may be exactly divided by 129?