1) Write two numbers that have a sum of *19* and a product of *48*.

2) The cost of framing a photograph is found using the formula $C = (l + b) \times 0{\cdot}55$ where l = length in centimeters, B = breadth in centimeters, C = cost in dollars. Find the cost of framing a photograph whose dimensions are *8* cm by *6* cm.

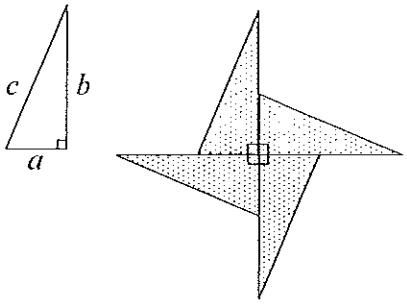
3) In my wallet, I have *$10* notes and *$2* coins only. I can afford to buy *5* video tapes at *$4·95* each, but I cannot afford to buy *6* audio tapes at *$4·65* each. How much money do I have?

4) The cost, C, in dollars, of an apartment on level L of a building in Sydney is given by $C = 400\,000 + 5000\,(L - 33)$. Find the cost of an apartment on level *42*.

5) The cost of *4* hamburgers and *2* drinks is *$16·00*. The cost of *3* hamburgers and *1* drink is *$11·20*. Find the cost of one hamburger.

6) Given the formula $P = 2L + 2B$, find L when $P = 100$ and $B = 8$.

7) Circle the correct answer in Q7 to Q13.



The shaded design is made from four of the small triangles. What is the perimeter of the design?

(A) $4c + 4b + 4a$ (B) $4c + 4b - 4a$
(C) $4a - 4b + 4c$ (D) $4a^2 + 4b^2 + 4c^2$

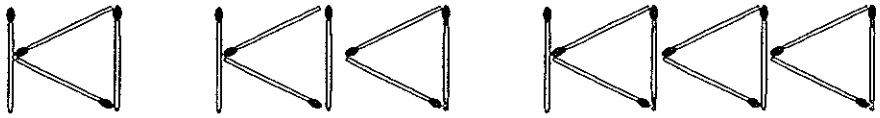
8) For which of the following equations will the solution be $x = 10$?

(A) $3(x - 2) = 24$ (B) $3 + (x - 2) = 11$
(C) $3 - (x - 2) = 5$ (D) $\frac{3+x}{3} = 10$

9) A consultant's fee is $\$245$ for eight hours work. To calculate her earnings (E) over a period of time she uses the formula $E = \frac{245n}{8}$. What does n represent?

(A) The earnings per day (B) The number of days worked
(C) The number of hours worked (D) The earnings per hour

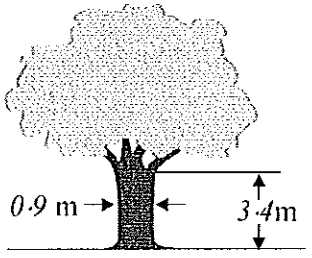
10)



For the pattern, Kim writes the rule, 'the number of matches equals three times the number of triangles plus one'. Using m = the number of matches, t = the number of triangles, the rule may be written as

(A) $m = 3t + 1$ (B) $3m = t + 1$
(C) $m + 1 = 3t$ (D) $3m + 1 = t$

11) The amount of usable timber in a tree is calculated using the formula $v = 0{\cdot}5hd^2 + 10$, where d = the diameter of the tree, h = the height to the first branch, v = amount of usable timber, in cubic metres. The amount of usable timber in this tree, to two decimal places, is



(A) $11{\cdot}38$ m^3 (B) $11{\cdot}53$ m^3 (C) $12{\cdot}34$ m^3 (D) $15{\cdot}20$ m^3

12) Which of the following are true statements?

(A) $a - a \times a = a$ (B) $a + a - a = a$

(C) $a \times a \div a = a$ (D) $a \div a \times a = a$

13) A solution to an equation is $C = 40$. The question could have been

(A) $2C^2 = 3200$ (B) $C^2 = \sqrt{50^2 - 30^2}$

(C) $C = 9 \times 5 - 85$ (D) $95 = 5 \times 11 + C$

14) Fred is one year older than Bill and one year younger than Mary. The sum of all their ages is *15*. Calculate the product of their ages.

Circle the correct answer in Q15 to Q21.

15) $5x - 7y + 3x + y =$

(A) $2x - 6y$ (B) $2x - 8y$ (C) $8x - 6y$ (D) $8x - 8y$

16) Which operations are needed to find the value of a, if $a^2 + 64 = 100$?

(A) Subtract *64* then find the square root.

(B) Subtract *64* then divide by *2*.

(C) Add *64* then find the square root.

(D) Add *64* then divide by *2*.

17) Which expression does NOT equal $2a$?

(A) $a \times a$ (B) $2 \times a$ (C) $3a - a$ (D) $a + a$

18)

x	-2	-1	0	1	2
y	-2	0	2	4	6

What is the correct rule for this table?

(A) $y = 2x + 2$ (B) $y = x + 4$ (C) $y = x + 2$ (D) $y = 2x - 2$

19) Solve the equation $2a + 4 = 48$.

(A) $a = 8$ (B) $a = 20$ (C) $a = 22$ (D) $a = 26$

20) In optics, the formula $M = \dfrac{f}{f - d}$ is used where M = magnification, f = focal length, d = distance from lens. Find M if $f = 10$ and $d = 8$.

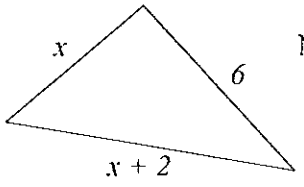
(A) -7 (B) $0{\cdot}2$ (C) 5 (D) 8

21) 'Half of a number is decreased by 5 and the result is 15.' If the number is x, this statement could be written as

(A) $\frac{1}{2}x - 5 = 15$ (B) $\frac{1}{2x} - 5 = 15$

(C) $\frac{x}{2} - 5 = 15$ (D) $\frac{1}{2}(x - 5) = 15$

22) Write an expression, in simplest form, for the perimeter of this triangle.



NOT TO SCALE

Circle the correct answer in Q23 to Q25.

23) Which of the following lists contains only *like terms*?

(A) $-3p, 3, 3p$ (B) $2q^2, q^2, pq^2$

(C) $x^2, x \times x, 6x^2$ (D) $y^3, 7^3, 2y^3$

24) Which of the following is equal to a^4?

(A) $4a$ (B) $a \times a \times a \times a$

(C) $a + a + a + a$ (D) $2a \times 2a$

25) The formula for calculating stopping distance in a car is $D = ut + \frac{u^2}{14}$, where D = stopping distance in metres, u = original speed in metres per second, t = reaction time in seconds. Find D if the original speed of John's car was 25 metres per second and his reaction time was half a second.

(A) 14·3 (B) 15·7 (C) 45·5 (D) 57·1

[Answers]

1) *16* and *3* »
2) *$7·70* »
3) *$26* »
4) *$445 000* »
5) *$3·20* »
6) *42* »
7) B »
8) A and B »
9) C »
10) A »
11) A »
12) B, C and D »
13) A and D »
14) *120* »
15) C »
16) A »
17) A »
18) A »
19) C »
20) C »
21) A, C »
22) *2x + 8* »
23) C »
24) B »
25 D »