F2 Early Summer Assignment: MC 01

1. How many significant figures are there in 68 000?
   A. 2
   B. 4
   C. 5
   D. Cannot be determined.

2. When rounding off 81 729.65, which of the following cannot be an answer?
   A. 81 730 (*cor. to 1 d.p.*)
   B. 81 730 (*cor. to the nearest ten*)
   C. 81 730 (*cor. to 4 sig. fig.*)
   D. 81 730 (*cor. to 5 sig. fig.*)

3. The weight of a rock is 56.0 g. Find the maximum absolute error.
   A. 0.05 g
   B. 0.1 g
   C. 0.25 g
   D. 0.5 g

4. Calculate 17.36 + 31.71 and round off the result correct to 3 significant figures.
   A. 49.0
   B. 49.07
   C. 49.1
   D. 50.0

5. Calculate 2.05 × 0.010 6 and round off the result correct to 2 significant figures.
   A. 0.02
   B. 0.021
   C. 0.022
   D. 0.023

6. The length of a side of a square is measured to be 3 cm (correct to the nearest cm). What is the maximum possible area of the square?
   A. 9 cm^2
   B. 9.302 5 cm^2
   C. 9.61 cm^2
   D. 12.25 cm^2

7. A rectangle has length 60 cm and width 30 cm. If the dimensions of the rectangle have been rounded off correct to the nearest cm, find the range of its area.

A. 1 711 cm^2 – 1 891 cm^2

B. 1 755.25 cm^2 – 1 845.25 cm^2

C. 1 795.5 cm^2 – 1 804.5 cm^2

D. 1 799 cm^2 – 1 801 cm^2

8. The radius of a circle is measured to be 9 cm (correct to the nearest cm). Find the maximum percentage error of the circumference.

A. 0.44%

B. 0.87%

C. 1.77%

D. 5.56%

9. A student uses a ruler with a scale in 1 mm to measure the length of a pen. If the percentage error is 1%, how long is the pen?

A. 0.005 mm

B. 0.01 mm

C. 50 mm

D. 100 mm

10. If $2x^2 + mx + n = (2x + 1)(x + 4)$, find the values of m and n.

A. $m = 2, n = 4$

B. $m = 1, n = 4$

C. $m = 2, n = 1$

D. $m = 9, n = 4$

11. Which of the following is correct?

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

B. $(2a + bc)(2a + bc) = 4a^2 - b^2c^2$

C. $(4xy - 1)(-1 - 4xy) = 1 - 16x^2y^2$

D. $(m + n)^2 = m^2 + n^2$

12. Which of the following is correct?

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

B. $(a + 3b)^2 = a^2 + 9b^2$

C. $(a + b)(a - b) = (-b - a)(-a + b)$

D. $(x - 9y)(x + 9y) = x^2 - 9y^2$

13. If the algebraic expression $x^2 - 8x + c$ is a perfect square expression, then the value of c in the expression is

A. 16.

B. -16.

C. 4.

D. -4.

14. If $(x + m)(x - n) \equiv x^2 + x - 2$, where m and n are integers, which of the following are the possible values of m and n?

A. $m = 1, n = 2$

B. $m = -1, n = 2$

C. $m = -1, n = -2$

D. $m = 1, n = -2$

15. $[(x + y) + 1][(x + y) - 1] =$

A. $x^2 + y^2 + 1$

B. $x^2 + y^2 - 1$

C. $x^2 + 2xy - y^2 - 1$

D. $x^2 + 2xy + y^2 - 1$

16. It is given that $(x - y)^2(x^2 + xy + y^2)^2 \equiv Ax^6 + Bx^3y^3 + Cy^6$, find the values of the constants A, B and C.

A. $A = 1, B = 4, C = 1$

B. $A = 1, B = 2, C = 1$

C. $A = 1, B = -2, C = 1$

D. $A = 1, B = -4, C = 1$

17. $(x - 1)(x + 1)(x^2 + 1)(x^4 + 1) =$

A. $x^8 + 1$

B. $x^8 - 1$

C. $x^6 + 1$

D. $x^6 - 1$

18. $(x + y + z)(x - y - z) - (x - y + z)(x + y - z) =$

A. $2x^2 - 2y^2 - 2z^2$

B. $-2y^2 - 2z^2 - 4yz$

C. $2x^2 - 4yz$

D. $-4yz$

19. If $x^2 + y^2 = 5$ and $xy = -1$, then $(x + y)^2 =$

A. 1.

B. 3.

C. 5.

D. 7.

20. Expand $(x-y)(x^2+xy+y^2)(y^3-x^3)$.

A. $-x^6+2x^3y^3-y^6$

B. $-x^6+y^6$

C. $x^6-2x^3y^3+y^6$

D. x^6-y^6

21. If $a:b=3:7$ and $b:c=7:2$, find $a:b:c$.

A. $1:4:5$

B. $3:4:5$

C. $3:7:2$

D. $3:10:5$

22. If $a:b:c=3:4:7$, which of the following is incorrect?

A. $a:c=3:7$

B. $b:c=4:7$

C. $a:b=3:4$

D. $c:b=4:7$

23. Peter and Michael invested \$100 000 and \$120 000 respectively to set up a clothing business. If there is a profit of \$66 000 which is shared in the ratio of their investments, how much of the profit does Michael obtain?

A. \$5 000

B. \$30 000

C. \$33 000

D. \$36 000

24. In ΔABC, $AB:AC:BC=5:2:4$. If $AC=4$ cm, find the perimeter of ΔABC.

A. 8 cm

B. 10 cm

C. 22 cm

D. 40 cm

25. If $(a+1):4=(a-2):5$, find a.

A. -13

B. -3

C. 3

D. 13

26. $\frac{1}{2} : \frac{1}{3} : \frac{1}{4} =$

A. 2 : 3 : 4

B. 4 : 3 : 2

C. 6 : 4 : 3

D. 9 : 8 : 7

27. An amount of money was shared among three persons A, B and C. A received $\frac{3}{8}$, B received $\frac{1}{5}$ and C received the rest. Find the ratio of the amounts received by A, B and C.

A. 3 : 1 : 9

B. 3 : 1 : 17

C. 15 : 8 : 3

D. 15 : 8 : 17

28. If $\frac{4q+p}{3q-p} = 3$, then $\frac{q+4p}{2q-p} =$

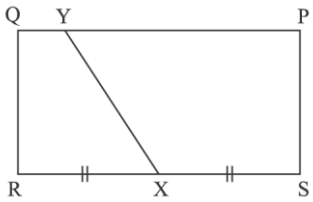
A. $\frac{1}{8}$.

B. $\frac{1}{4}$.

C. 4.

D. 8.

29. In the figure above, PQRS is a rectangle. If X is the mid-point of RS and the ratio of the areas of QRXY and PSXY is 1 : 2, then QY : PY =



A. 1 : 3.

B. 1 : 5.

C. 2 : 3.

D. 2 : 5.

30. In Brazil, the cost of coffee bean produced in city A is \$0.22/kg and that of coffee bean produced in city B is \$0.31/kg. If the two kinds of coffee beans are mixed to produce a new brand of coffee powder with the expected cost of \$0.29/kg, in what ratio should the two kinds of coffee beans be mixed together?

A. 2 : 5

B. 2 : 7

C. 2 : 9

D. 3 : 4