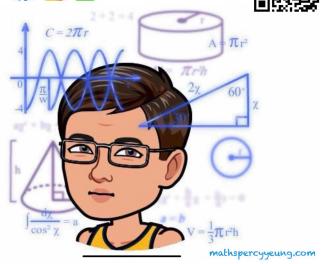


Chapter 2 Basic Algebra

Multiple Choice Section

1. Ken was born on the nth day of a certain month. Which of the following numbers cannot be represented by n?

A. 30 B. 31 C. 32 D. 29

2. When a number b is divided by 4, the quotient is an odd number. What is the value of b?

A. 48 B. 16 C. 40 D. 36

3. Write down the sum of y and 10 in algebraic form.

A. $y + 10$ B. $10y$ C. $\frac{y}{10}$ D. $y - 10$

4. Write down the following in algebraic form:

Subtracting y from x and then plus z is 12.

A. $x - y + z = 12$ B. $y - x + z = 12$

C. $x + y - z = 12$ D. $x - y - z = 12$

5. Simplify $9a - (3a + 2a)$.

A. $8a$ B. $5a$ C. $7a$ D. $4a$

6. Which of the following is the expanded form of $8r^2st^2$?

A. $8 \times 2r \times s \times 2$ B. $8 \times r \times r \times s \times t \times t$

C. $8 + r2 + s + t^2$ D. $8 + 2r + s + 2t$

7. Write $9a^5e^2$ in the expanded form.

A. $9 \times 5a \times 2e$ B. $9 \times a \times a \times a \times a \times a \times e \times e$

C. $9 \times 5a \times a \times a \times a \times a \times 2e \times e$ D. $9 \times 5a \times 5a \times 5a \times 5a \times 5a \times 2e \times 2e$

8. q subtracted from p is -8. Which of the following sets of values is incorrect?

A. $p = 24$, $q = 16$

B. $p = 16$, $q = 24$

C. $p = 1$, $q = 9$

D. $p = -10$, $q = -2$

9. If $f = 3$, find the value of $f + 4$.

A. -3 B. 3 C. -7 D. 7

10. If $f = -4$, find the value of $f + 10$.

A. 14 B. -6 C. -14 D. 6

11. Given $F = \frac{9}{5}C + 32$. If $C = 80$, find the value of F.

A. 176 B. 144 C. 126 D. 88

12. Given $S = \frac{n(n+1)}{2}$. If $n = 9$, find the value of S.

A. 9.5 B. 50 C. 40.5 D. 45

13. Given $E = mgh$. If $m = 5$, $g = 12$ and $h = 4$, find the value of E.

A. 240 B. 20 C. 60 D. 48

14. Given $y = ab + bc + ac$. If $a = 2$, $b = 2$ and $c = 3$, find the value of y.

A. 14 B. 16 C. 7 D. 10

15. Given the formula $a = \frac{b}{2}[2c + (b-1)d]$. If $b = 8$, $c = 4$ and $d = 1$, find the value of a.

A. 45 B. 30 C. 60 D. 15

16. Given $y = (a+b)^2$. If $a = 2$ and $b = 6$, find the value of y.

A. 16 B. 40 C. 64 D. 24

17. If $m = 5$, $n = 2$ and $p = 20$, find the value of $(m + n)^2 - p$.

A. 39 B. 19 C. 6 D. 29

18. Solve the equation $8 = x - 3$.

A. -11 B. 5 C. 11 D. -5

19. Solve the equation $\frac{c+1}{2}=5$.

A. 4 B. 8 C. 9 D. 10

20. Solve the equation $\frac{5x+2}{8}=4$.

A. 4 B. 5 C. 6 D. 7

21. If $\frac{4x}{5}+2=4$, then x =

A. 0.8 B. 2.5 C. $\frac{13}{4}$ D. $\frac{25}{4}$

22. Solve the equation $2x - [(-3) + (-4)] = -5$.

A. -6 B. 12 C. 8 D. -2

23. If $(-m) \times m \times (-m) = -\frac{125}{27}$, then m =

A. $-\frac{25}{9}$ B. $-\frac{5}{3}$ C. 0 D. $\frac{5}{3}$

24. Mr. Lee receives wage \$$X$, which is 3 times the wage that Mr. Cheung receives. If Mr. Cheung has used \$2 000, how much has he left?

A. $\$(3X+2\,000)$ B. $\$(3X-2\,000)$

C. $\$(\frac{X}{3}+2\,000)$ D. $\$(\frac{X}{3}-2\,000)$

25. A string is x m long. If y m of the string is cut, $3y$ m remains. Find the formula for y.

A. $y = 2x$ B. $y = 4x$ C. $y=\frac{x}{4}$ D. $y = x$

26. Matt has x boxes of candies, each box has 2 bags, each bag has 9 candies. Find the formula for the number of candies T that Matt has.

A. $T = 18x$ B. $T = 11 + x$ C. $T = 11x$ D. $T = \frac{2x}{9}$

27. Given that the length of each side of an equilateral triangle is $2c$ cm, find the perimeter of the equilateral triangle.

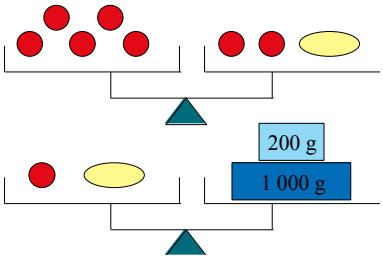
A. $6c$ cm B. $5c$ cm C. $(2c + 3)$ cm D. $(2c - 3)$ cm

28. 2 subtracted from 4 times a certain number is 10. Find this number.

A. -2 B. 3 C. 2 D. -3

29.  represents an apple;  represents a pineapple.

Observe the diagram carefully, and find out the weight of an apple.



A. 160 g B. 200 g C. 240 g D. 300 g

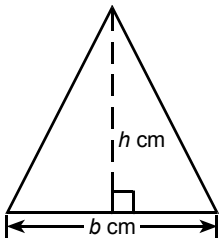
30. The sum of three consecutive even numbers is 102, find these three numbers.

A. 28, 30, 32 B. 32, 34, 36 C. 30, 32, 34 D. 26, 28, 30

31. Mr. Lee's age is 6 less than his daughter's age times 4. If he is 66 years old now, how old is his daughter now?

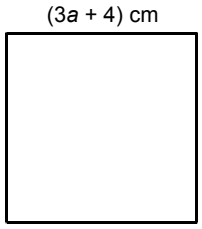
A. 18 years old B. 12 years old C. 15 years old D. 14 years old

32. The diagram shows a triangle, with height h cm, and base b cm. If $h = 8$ and $b = 7$, find the area of the triangle.



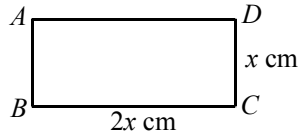
A. 15cm^2 B. 56cm^2 C. 1cm^2 D. 28cm^2

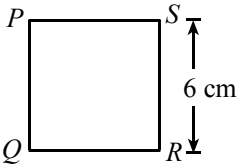
33. The perimeter of the square is 48 cm, find the value of a.



A. $\frac{7}{3}$ B. $\frac{8}{3}$ C. 2 D. 3

34. In the following diagram, the length and the width of the rectangle $ABCD$ are $2x$ cm and x cm respectively. The length of each side of the square $PQRS$ is 6 cm. If the perimeters of the rectangle $ABCD$ and the square $PQRS$ are equal, find the value of x.





A. 6 B. 24 C. 4 D. 18

35. The length of a rectangle is 5 times its width, and its perimeter is 30 cm. Find the length of the rectangle.

A. 6 cm B. 2.5 cm C. 12.5 cm D. 15 cm

Section A(1)

1. Use an algebraic expression to represent each of the following sentences.

(a) Subtract y from x.

(b) Divide $(n^3 - 2)$ by m^2.

(c) Add 3 to a and then multiply the sum by triple of b.

2. Let $F = (a + b)\,c$.

(a) If $a = 2$, $b = 3$ and $c = 4$, find the value of F.

(b) If $a = 5$, $b = -2$ and $c = -\frac{1}{2}$, find the value of F.

3. If $m = 6$ and $n = -3$, find the values of the following expressions.

(a) $\frac{m+n}{2}$ **(b)** $m^2 + n^2$

4. Let $s = ut + \frac{1}{2}at^2$. If $u = 50$, $t = 3$ and $a = 10$, find the value of s.

5. If $p = -\frac{1}{2}$ and $q = 4$, find the values of the following expressions.

(a) $(q - 1)(q + 1)$ **(b)** $p^2 - 2pq + q^2$

6. Simplify the following expressions.

(a) $2x + 3x + 4x$ **(b)** $3y - 8y + 2y$

7. Simplify the following expressions.

(a) $3x - y + 6x + 7y$ **(b)** $x - 8y - 6 + 10y - 5x + 3$

8. Simplify the following expressions.

(a) $m \cdot m \cdot m \cdot m - n \cdot n$ **(b)** $8 \cdot x \cdot y \cdot y \cdot x \cdot 4 \cdot x$

9. Solve the following equations.

(a) $x - 5 = 4$ **(b)** $x + 6 = -2$

10. Solve the following equations.

(a) $2x - 5 = 11$ **(b)** $3x + 7 = 1$

11. Solve the equation $10 - y = 6$.

12. Solve the equation $\frac{x}{2} - 3 = 10$.

13. Solve the equation $\frac{4}{5}x - 8 = \frac{1}{2}$.

14. Solve the equation $9 - \frac{2x}{3} = 6$.

15. The prices of an apple and an orange are \$2 and \$1.5 respectively. How much does it cost to buy x apples and $2x$ oranges? (Express the answer in terms of x.)

16. The price of a ball pen is \$$p$. The price of a pencil is twice that of a ball pen. How much does it cost to buy 4 ball pens and p pencils? (Express the answer in terms of p.)

17. Suppose there are n participants in a pic-nic.

The fee for each person is \$$C$, where $C = 1000 + 40n$.

(a) If the number of the participants is 30, find the total fee.

(b) If the total fee is \$2 000, find the number of participants.

18. Two-third of a number is 18, find the number.

Section A(2)

19. Let $f = \sqrt{\frac{ab}{-r^2} - cd^3}$. If $a = -50$, $b = 2$, $c = 4$, $d = -2$ and $r = -5$, find the value of f.

20. Solve the equation $3(2x - 5) = -6$.

21. Solve the equation $10 + 5(x - 1) = 100$.

22. Solve the equation $\frac{1}{3}(5x - 2) = 1$.

23. Solve the equation $\frac{2}{5}(14x - 8) = -20$.

24. Solve the following equations.

(a) $\frac{3x - 1}{4} = 5$ **(b)** $\frac{2y - 5}{3} = -2$

25. Solve the following equations.

(a) $\frac{y-2}{4}=90$ **(b)** $\frac{y-2}{4}-180=-90$

26. Solve the following equations.

(a) $\frac{2(3x-5)}{5}=7$ **(b)** $\frac{2(3x-5)}{5}+2=9$

27. Solve the following equations.

(a) $\frac{2}{3}(4x-1)=-20$ **(b)** $\frac{2}{3}(4x-1)-5=-25$

28. A number times 8 and then plus –20 equals –44. Find the number.

29. Simson has \$38. If he gives \$8 to Nicholas, then Nicholas will have the same amount of money as Simson. How much does Nicholas originally have?

30. If 20 students are added into a class and then the class is divided into four groups, each group will have 16 students. How many students does the class originally have?

31. If the length of each side of a square is increased by 2 cm, then the perimeter becomes 28 cm. Find the original area of the square.

Section B

32. Sammi originally had \$($18x$ – 400) pocket money. After buying $\frac{7x}{4}$ sweets, \$6 were left. Given that the price of each sweet is \$2.

(a) Express, in terms of x, the amount of money Sammi had spent to buy sweets.

(b) Find the value of x.

(c) How much did Sammi originally have?