1. A jar contains blue, red, and green balls only.

   There are 16 blue balls in the jar and 24 more red balls than blue balls.

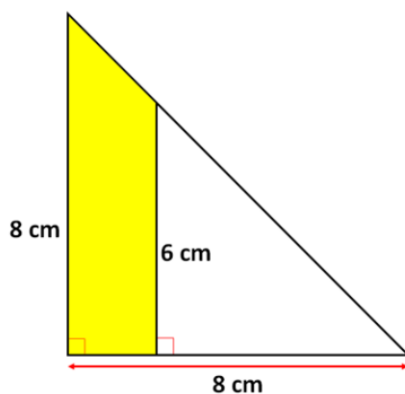   If the number of green balls in the jar is half the number of red balls, how many balls are in the jar?

   a. 12
   b. 20
   c. 44
   d. 68
   e. 76

2. Brian's age is half the sum of the ages of Jack and Cory.

   If Brian is 2 years younger than Jack and Cory is 32 years old, how old is Brian?

   a. 28 years old
   b. 30 years old
   c. 32 years old
   d. 34 years old
   e. 36 years old

3.

   In the figure above, what is the area of the coloured region?

   a. 14 square centimetres
   b. 16 square centimetres

c. 18 square centimetres
d. 24 square centimetres
e. 32 square centimetres

4. Carl spent $25 to buy plums at the supermarket for 50 cents each.

   The next day, plums went on sale for 30 cents each and Carl spent $45 to buy more plums.

   What was the average price per plum that Carl spent?

   a. 25 cents
   b. 30 cents
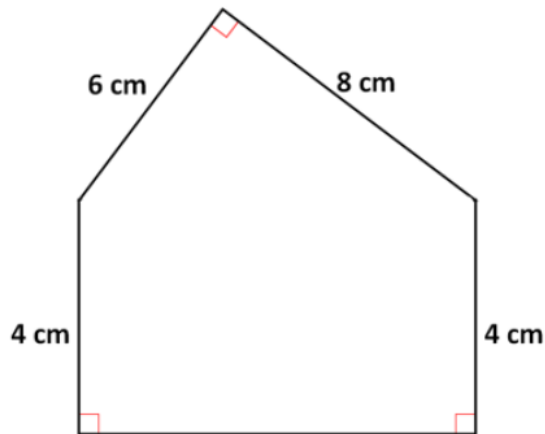   c. 35 cents
   d. 40 cents
   e. 45 cents

5. Last week the price of the toaster was $120.

   This week the price of the same toaster was $150.

   By how many percent did the price of the toaster increase?

   a. 5 percent
   b. 10 percent
   c. 25 percent
   d. 30 percent
   e. 40 percent

6. The dimensions of a pentagon are shown below.

   What is the perimeter of the pentagon?

   a. 24 centimetres
   b. 28 centimetres
   c. 30 centimetres
   d. 32 centimetres
   e. 36 centimetres

7. A dairy farm has 180 cows.

   108 of the cows are brown cows and the rest are black cows. What percent of the cows on the dairy farm is black?

   a. 5 percent
   b. 25 percent
   c. 35 percent
   d. 40 percent
   e. 60 percent

8. The ratio of two numbers is 9:1.

   If the sum of the two numbers is 80, what is the value of the larger number?

   a. 64
   b. 70
   c. 72

d. 74
e. 76

9. Mr. Thompson will be 35 in 6 years.

How old was he 4 years ago?

a. 24 years old
b. 25 years old
c. 29 years old
d. 30 years old
e. 31 years old

10. A snack stand only sells tacos and salads.

Yesterday, the snack stand sold 205 tacos and 75 salads.

The number of vegan tacos sold yesterday was 35 less than 3 times the number of non-vegan tacos.

If the ratio of the number of non-vegan tacos sold yesterday to the number of vegan salads sold yesterday was 5 to 4, how many non-vegan salads were sold yesterday?

a. 20
b. 27
c. 48
d. 60
e. 87

11. A crate contains 10 boxes, each box contains 20 containers, and each container contains 200 screws.

   How many screws are contained in 2 crates and 2 boxes?

   a. 40,000 screws
   b. 44,000 screws
   c. 66,000 screws
   d. 80,000 screws
   e. 88,000 screws
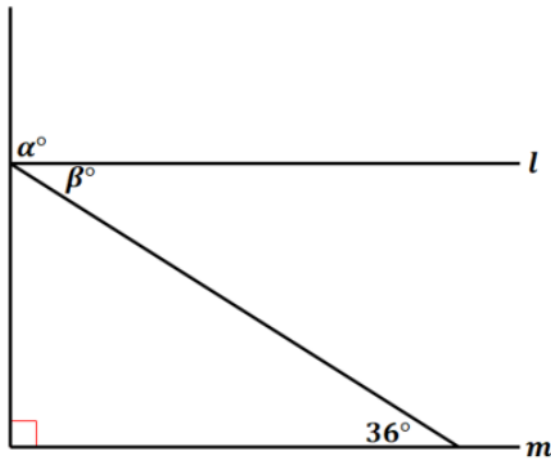

12. In the addition problem below, **P** and **Q** represent the digits of the three-digit numbers.

$$+\ \begin{array}{r} 1\mathbf{PQ} \\ \mathbf{QP}1 \\ \hline 746 \end{array}$$

   What is the value of **P**?

   a. 2
   b. 3
   c. 4
   d. 6
   e. 7

13.

In the figure above, lines l and m are parallel.

What is the value of $\alpha + \beta$?

a. 124
b. 125
c. 126
d. 127
e. 128

14. Andrea, Francine, and Rosalie bought a new blender for their apartment.

They decided to split the price of the blender such that Andrea paid $7 less than half the price of the blender, Francine paid $8 more than $\frac{1}{4}$ the price of the blender, and Rosalie paid the remaining $20.

How much did the blender cost?

a. $72
b. $76
c. $80
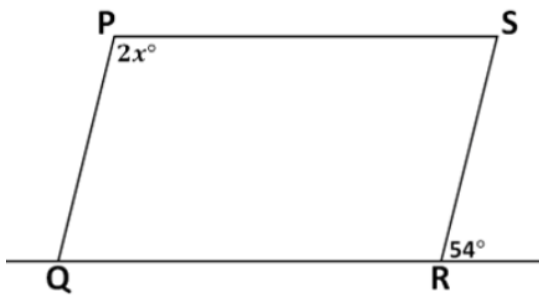d. $84

15. The sum of the ages of Michael and Angelo is 12.

If Angelo is twice as old as Michael, how old will Michael be in 12 years?

    a. 4 years old
    b. 8 years old
    c. 12 years old
    d. 16 years old
    e. 20 years old

16.

In the figure above, **PQRS** is a parallelogram.

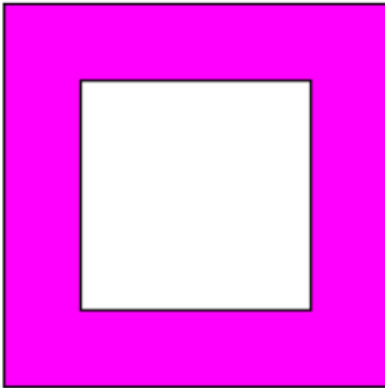What is the value of **x**?

    a. 52
    b. 54
    c. 57
    d. 59
    e. 63

17. The Drama Club collected a total of $1,749 during a fund-raiser event.

If each person at the fund-raising event donated at least $50, what is the greatest possible number of contributors at the fund-raising event?

   a. 33
   b. 34
   c. 35
   d. 36
   e. 37

18.

In the figure above, a smaller square is inside a larger square and the area of the coloured region is 48 square centimetres.

If the sum of a side of the larger square and a side of the smaller square is 12 centimetres, what is the perimeter of the larger square?

   a. 8 centimetres
   b. 16 centimetres
   c. 20 centimetres
   d. 32 centimetres
   e. 36 centimetres

19. Harold spends $2,240 each month on rent, which is 35 percent of his monthly earnings.

   How much are his monthly earnings?

   a. $6,200
   b. $6,400
   c. $6,600
   d. $6,800
   e. $7,000

20. **A,B** and **C** are consecutive integers in increasing order.

   Which of the following must be true?
       i. **A** x **B** is even
      ii. **C** - **A** is even
     iii. **A** x **C** is even

   a. i only
   b. ii only
   c. iii only
   d. i and ii only
   e. i and iii only

21. The length of a rectangle is increased by 40 percent and its width is decreased by 20 percent.

   Which of the following statements is true about the area of the new rectangle?

   a. The area of the new rectangle will increase by 20 percent.
   b. The area of the new rectangle will increase by 16 percent.
   c. The area of the new rectangle will increase by 12 percent.
   d. The area of the new rectangle will increase by 8 percent.

e. The area of the new rectangle will increase by 4 percent.

22. Oranges are sold in small packs of six or large packs of eleven only.

If Anthony bought exactly 70 oranges, how many large packs did he buy?

a. 2
b. 3
c. 4
d. 5
e. 6

23. If N is a negative number, which of the following must be positive?

i. N^2
ii. $-N$
iii. $\dfrac{1}{N}$

a. i only
b. ii only
c. iii only
d. ii and iii only
e. i, ii, and iii

24. A box contains gold, silver, and bronze medals only.

The ratio of the number of gold medals to the number of silver medals to the number of bronze medals is 5:7:8.

If there are 120 medals in total in the box, how many silver medals are there?

a. 15
b. 30
c. 38

d. 42

e. 48

25. The ratio of the number of wins to the number of losses of the basketball team last season was 5 to 3.

If the basketball team had 9 losses last season, how many games did the team play last season?

a. 15 games
b. 18 games
c. 21 games
d. 24 games
e. 30 games

26. Each student in the auditorium is either a Sophomore, a Junior, or a Senior.

Among the 60 Sophomore students, 20 percent are members of the Science Club.

Among the 50 Junior students, 40 percent are members of the Science Club.

Among the 40 Senior students, 10 percent are members of the Science Club.

What percent of the students in the auditorium are members of the Science Club?

a. 20 percent
b. 24 percent
c. 36 percent
d. 38 percent
e. 70 percent

27. The average (arithmetic mean) of P, Q, R, 16, 20, and 15 is 15.

What is the average of P, Q, R?

a. 12

b. 13
c. 14
d. 15
e. It cannot be determined.

28. The price of a headset this month was $42, which was 25 percent greater than the price of the headset last month.

    What was the price of the headset last month?

    a. $27.00
    b. $28.00
    c. $31.50
    d. $33.60
    e. $34.50

29. Twenty percent of the yearly exports of the Federation Republic come from manufacturing.

    One-sixth of all the manufacturing exports are spacesuits.

    If the Federation Republic generates $4.25 million from spacesuit exports, how much money does it generate from its yearly total exports?

    a. $21.25 million
    b. $25.5 million
    c. $105.25 million
    d. $127.5 million
    e. $153 million

30. Last year Ruby spent 15 percent of her annual earnings on travel.

    This year her annual earnings were 10 percent less than her annual earnings last year, and she spent 30 percent of her annual earnings this year on travel.

    The amount she spent on travel this year is what percent of the amount she

spent on travel last year?

    a. 100 percent
    b. 160 percent
    c. 180 percent
    d. 200 percent
    e. 220 percent

31. Sal correctly answers 45 percent of the first 80 questions in the test.

How many of the remaining 82 questions must Sal correctly answer to have correctly answered exactly 50 percent of all the questions in the test?

    a. 36 questions
    b. 45 questions
    c. 50 questions
    d. 55 questions
    e. 81 questions

32. A bird flew a distance of 160 kilometres in 2 hours 40 minutes.

How fast was the bird flying in kilometres per hour?

    a. 54 kilometres per hour
    b. 60 kilometres per hour
    c. 84 kilometres per hour
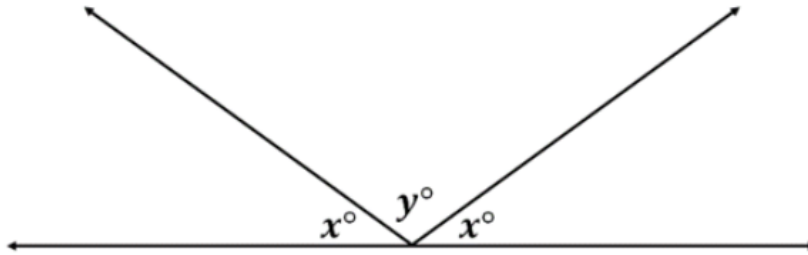   d. 116 kilometres per hour
    e. 120 kilometres per hour

33. A printer prints at a constant rate of 2 pictures every 5 minutes.

How many seconds will it take the printer to print 10 pictures?

    a. 4
    b. 20
    c. 25

d. 240
e. 1,500

34.

In the figure above, the ratio of y to x is 3.

What is the value of y?

a. 72
b. 88
c. 96
d. 108
e. 124

35. Caitlyn's marriage to John last weekend was very wonderful.

20 private cars and 12 buses were parked outside the hall.

After the ceremony, each bus carried 35 people and each private car carried 3 people.

How many people were in the hall?

a. 480
b. 500
c. 350
d. 525
e. 400