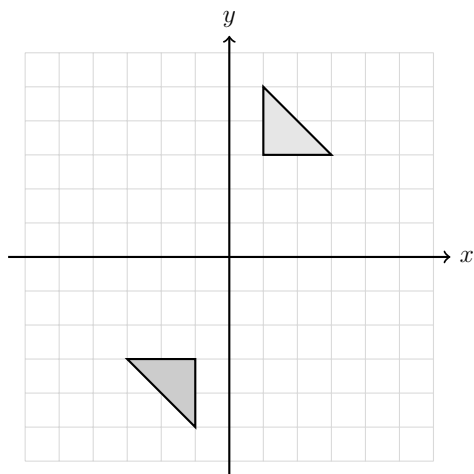


Worksheet: PRACTICE MATHS SET 1 F

$$\text{Area of Parallelogram} = b \times h \quad \text{Volume of Cube} = s^3 \quad x^a \times x^b = x^{a+b}$$

Question 1**(Total for question 1 is 1 mark)**

A triangle has corners at $(1, 3)$, $(3, 3)$, and $(1, 5)$ on a grid. A new triangle is drawn with corners at $(-1, -3)$, $(-3, -3)$, and $(-1, -5)$. What single change moves the first triangle exactly onto the second triangle?



- A) A reflection in the horizontal x-axis
- B) A reflection in the vertical y-axis
- C) A slide of 4 units to the left
- D) A rotation of 180 degrees about the center $(0,0)$

Question 2**(Total for question 2 is 1 mark)**

A large box holds t-shirts that are red, white, or navy. One-fifth of the t-shirts are red and three-tenths are white. If there are exactly 25 navy t-shirts, how many white t-shirts are inside the box?

- A) 10
- B) 15
- C) 20
- D) 25

Question 3**(Total for question 3 is 1 mark)**

A shop counts its weekend visitors. Because of a rainstorm, the number of visitors this weekend was 35% lower than last weekend. If 130 visitors came to the shop this weekend, how many visitors came last weekend?

- A) 175
 - B) 200
 - C) 165
 - D) 220
-

Question 4

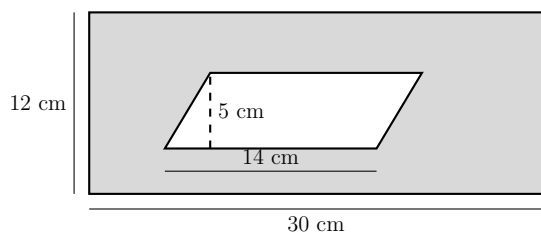
(Total for question 4 is 1 mark)

If $7^2 \times 7^6 = 7^n$, what is the matching number for n ?

- A) 12
- B) 4
- C) 14
- D) 8

Question 5**(Total for question 5 is 1 mark)**

A builder cuts a small shape out from a flat sheet of metal. The large sheet is a rectangle measuring 30 cm by 12 cm. The shape cut out is a parallelogram with a base of 14 cm and a height of 5 cm. Find the area of the metal sheet that is left over.



- A) 290 cm^2
- B) 360 cm^2
- C) 70 cm^2
- D) 310 cm^2

Question 6**(Total for question 6 is 1 mark)**

Look at these two math rules: $3A + 3B = M$ and $3A + 3B + 2M = 45$. Find the value of M .

- A) 10
- B) 5
- C) 9
- D) 15

Question 7**(Total for question 7 is 1 mark)**

A cardboard box is made perfectly in the shape of a cube. If you add up the lengths of all 12 straight edges of the box, the total is 60 cm. What is the total volume space inside this box?

- A) 150 cm^3
- B) 125 cm^3
- C) 25 cm^3
- D) 216 cm^3

Question 8**(Total for question 8 is 1 mark)**

Look at this number pattern: 4, 6, 10, 16, 24, ... What number should come next in the pattern?

- A) 32
- B) 36
- C) 38

D) 34

Question 9

(Total for question 9 is 1 mark)

What number must go into the blank line to make this correct: $(6.25 + \text{---})^2 = 0.4 \times 0.4 \times 100$?

A) 1.75

B) -2.25

C) 3.75

D) -0.25

Question 10**(Total for question 10 is 1 mark)**

A computer creates a 4-digit secret code using different odd digits. The numbers must be written in order from smallest to largest. If the whole 4-digit code can be divided exactly by 9, what is the code?

- A) 1359
- B) 1539
- C) 3579
- D) 1357

Question 11**(Total for question 11 is 1 mark)**

Three friends are baking. Leo makes y cupcakes. Nina makes 6 more cupcakes than Leo. Oscar makes twice as many cupcakes as Nina. Find the formula for the total number of cupcakes they make altogether.

- A) $4y + 18$
- B) $3y + 12$
- C) $4y + 6$
- D) $3y + 18$

Question 12**(Total for question 12 is 1 mark)**

A rectangular car park has an area of 400 m^2 and a width of 16 m. A storage yard shares a full side with the length of the car park and has a width of 6 m. What is the total perimeter around the outside of the combined area?

- A) 84 m
- B) 76 m
- C) 94 m
- D) 114 m

Question 13**(Total for question 13 is 1 mark)**

A builder mixes a batch of concrete using 2 parts sand, 3 parts gravel, and 7 parts cement. If the project uses 21 kg of cement, what is the total weight of the whole completed concrete mix?

- A) 42 kg
- B) 56 kg
- C) 36 kg
- D) 63 kg

Question 14**(Total for question 14 is 1 mark)**

Look at the algebra equation: $5k + d = 2k + 20$. If $k = 4$, what is the value of d ?

- A) 8
- B) 12
- C) 6
- D) 4

Question 15**(Total for question 15 is 1 mark)**

A child has 20 individual wooden cubes that each measure $1\text{ cm} \times 1\text{ cm} \times 1\text{ cm}$. How many completely different shapes of solid blocks can be built using all 20 cubes each time?

- A) 3
- B) 5
- C) 6
- D) 4

Question 16**(Total for question 16 is 1 mark)**

A parking lot contains a total of 15 vehicles made up only of 2-wheeled scooters and 4-wheeled delivery vans. If there are 46 wheels on the ground in total, how many delivery vans are parked in the lot?

- A) 6
- B) 7
- C) 8
- D) 9

Question 17**(Total for question 17 is 1 mark)**

In a school group, 70% of the pupils study history, 40% study politics, and 20% study both subjects. If there are 6 pupils who study neither subject, how many total pupils are in the school group?

- A) 80
- B) 60
- C) 100
- D) 75

Question 18**(Total for question 18 is 1 mark)**

Runner A and Runner B start running at the same moment. Runner A runs along a straight path that is 6 km long at a steady speed of 5 km per hour. Runner B runs along a longer winding path that is 9 km long and finishes at the exact same time as Runner A. What was the speed of Runner B?

- A) 7.2 km/h
- B) 8.0 km/h
- C) 7.5 km/h
- D) 6.8 km/h

Question 19**(Total for question 19 is 1 mark)**

A quiz test has 30 questions. A correct answer scores +3 points, an incorrect answer scores -1 point, and an unanswered question scores 0 points. What is the total gap between the lowest possible score and the highest possible score you could get?

- A) 90
- B) 120
- C) 60
- D) 150

Question 20**(Total for question 20 is 1 mark)**

An apprentice is one-quarter the age of his manager. In 15 years' time, the manager will be exactly twice as old as the apprentice. How old is the apprentice right now?

- A) 7.5
 - B) 10
 - C) 12.5
 - D) 9
-

Question 21**(Total for question 21 is 1 mark)**

Which one of the following statements about numbers is false? The letters can stand for any positive or negative whole number.

- A) If M is a negative number, $M + M$ must also be a negative number.
- B) A number multiplied by itself (S^2) can never be a negative number.
- C) If K is a negative number, $K \div K$ must be a negative number.
- D) A positive number multiplied by its negative value ($V \times -V$) can never be a positive answer.

Question 22**(Total for question 22 is 1 mark)**

Sam saves a pocket money sum of £ X every week to buy a game console. After 9 weeks of saving, he has successfully saved 60% of the total price. If he saves $X = 40$ each week, what is the total price of the game console?

- A) £540
- B) £480
- C) £720
- D) £600

Question 23**(Total for question 23 is 1 mark)**

Look at this set of data values: -7, -3, 2, 6, 8, 12. What is the absolute difference between the mean and the median of these numbers?

- A) 1.0
- B) 0.5
- C) 0.0
- D) 1.5

Question 24**(Total for question 24 is 1 mark)**

At 16:20, a television movie is exactly halfway through its running time. At 16:56, the movie has exactly 10% left to run until the end. At what time did the movie start?

- A) 15:40
- B) 15:50
- C) 15:35
- D) 15:45

Question 25**(Total for question 25 is 1 mark)**

100 people take a math test on Saturday. There are 8 more men than women taking the test. The results show that 85% of all the people pass. If exactly 4 men fail the test, how many women pass?

- A) 40
- B) 42
- C) 38
- D) 35

Solutions

1. **D** — A rotation of 180 degrees about the origin maps grid coordinates $(x, y) \rightarrow (-x, -y)$.
2. **B** — Fractions: $1 - \frac{1}{5} - \frac{3}{10} = \frac{5}{10} = \frac{1}{2}$ navy items. Total inventory = 50 $\implies$ white = $\frac{3}{10} \times 50 = 15$.
3. **B** — Equation: $0.65x = 130 \implies x = 130 \div 0.65 = 200$ visitors.
4. **D** — Adding index rules: $2 + 6 = 8$.
5. **A** — Base math steps: $(30 \times 12) - (14 \times 5) = 360 - 70 = 290 \text{ cm}^2$.
6. **D** — Substitute terms: $M + 2M = 45 \implies 3M = 45 \implies M = 15$.
7. **B** — Cube edges: $60 \div 12 = 5 \text{ cm per side} \implies 5^3 = 125 \text{ cm}^3$.
8. **D** — Pattern gaps change by +2, +4, +6, +8 $\implies +10 \implies 24 + 10 = 34$.
9. **B** — Statement value: $(6.25 + x)^2 = 16 \implies 6.25 + x = 4 \implies x = -2.25$.
10. **A** — Code constraints: Digits 1, 3, 5, 9 add up to 18 (divisible by 9) in ascending order.
11. **A** — Formula logic steps: $y + (y + 6) + 2(y + 6) = 4y + 18$.
12. **C** — Car park length = $400 \div 16 = 25\text{m}$. Combined footprint width = $16 + 6 = 22\text{m}$. Perimeter = $2 \times (25 + 22) = 94\text{m}$.
13. **C** — Concrete: 7 parts = 21 kg $\implies$ 1 part = 3 kg $\implies$ Total parts = $12 \times 3 = 36 \text{ kg}$.
14. **A** — Equation evaluation: $5(4) + d = 2(4) + 20 \implies 20 + d = 28 \implies d = 8$.
15. **D** — Cuboid side dimensions: $1 \times 1 \times 20, 1 \times 2 \times 10, 1 \times 4 \times 5, 2 \times 2 \times 5$ (yields 4 combinations).
16. **C** — System equations: $s + v = 15, 2s + 4v = 46 \implies 2v = 16 \implies v = 8$ vans.
17. **B** — Group sets: $70\% + 40\% - 20\% = 90\% \implies 10\% \text{ neither} = 6 \implies \text{Total} = 60$.
18. **C** — Speed logic: Time = $6 \div 5 = 1.2 \text{ hours} \implies \text{Speed B} = 9 \div 1.2 = 7.5 \text{ km/h}$.
19. **B** — Score range: Max score = +90, Min score = -30 $\implies$ Total interval gap = $90 - (-30) = 120$.
20. **A** — Age formula tracking: $4t + 15 = 2(t + 15) \implies 4t + 15 = 2t + 30 \implies 2t = 15 \implies t = 7.5$.
21. **C** — A negative integer divided by another negative integer always gives a positive one ($K \div K = 1$).

22. **D** — Value parameters: $\text{Saved} = 9 \times 40 = 360 \implies 360 = 0.60 \times \text{Price} \implies \text{Price} = 600.$
23. **A** — Central values: $\text{Mean} = 3.0, \text{Median} = (2+6) \div 2 = 4.0 \implies \text{Absolute Difference} = 1.0.$
24. **C** — Running time steps: Between 16:20 and 16:56, 36 mins passes, which is $\frac{1}{2} - \frac{1}{10} = 40\%$ of movie $\implies \text{Total runtime} = 90$ mins. Running for 45 mins at 16:20 $\implies \text{Start time} = 15 : 35.$
25. **D** — Split group values: 54 men, 46 women. Total pass = 85, total fail = 15. Men fail = 4 $\implies$ Women fail = 11 $\implies$ Women pass = $46 - 11 = 35.$