

Worksheet: PRACTICE MATHS SET 1 E

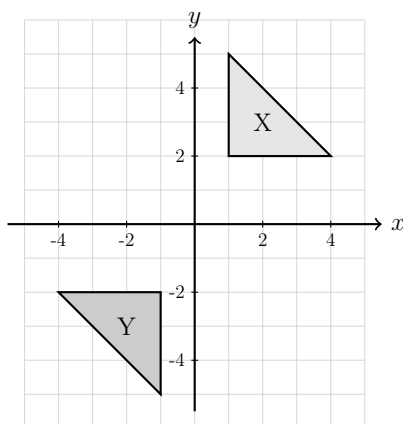
$$\text{Area of Parallelogram} = b \times h$$

$$\text{Surface Area of Cube} = 6s^2$$

$$x^a \times x^b = x^{a+b}$$

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

Shape X is plotted on a grid at (1, 2), (4, 2), and (1, 5). Shape Y has vertices at (-1, -2), (-4, -2), and (-1, -5). Which single transformation moves Shape X exactly onto Shape Y?



- A) A translation of 3 units down and 2 units left
- B) A reflection in the x-axis
- C) A rotation of 180 degrees about the origin
- D) A reflection in the y-axis

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

A box contains marbles that are red, blue, or green. One-third are red and two-fifths are green. If there are 16 blue marbles, how many red marbles are in the box?

- A) 20
- B) 24
- C) 30
- D) 12

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

What number is a quarter of 80 larger than half of 60% of 300?

- A) 90
- B) 110
- C) 70
- D) 130

Question 4**(Total for question 4 is 1 mark)**

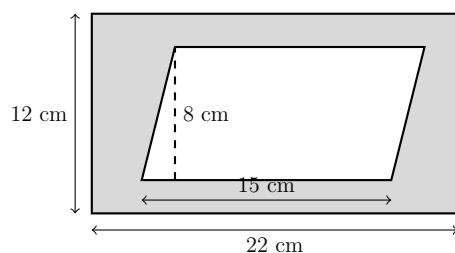
If $5^4 \times 5^5 = 5^k$, what is the value of k ?

- A) 20

- B) 9
- C) 1
- D) 25

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

A parallelogram with a base of 15 cm and a height of 8 cm is cut out from a rectangle measuring 22 cm by 12 cm. What is the area of the remaining shaded part?



- A) 264 cm^2
- B) 144 cm^2
- C) 120 cm^2
- D) 184 cm^2

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

Consider the equations: $X + Y = Z$ and $X + Y + 4Z = 45$. What is the value of Z ?

- A) 5
- B) 15
- C) 9
- D) 12

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

In 2026, Mr. Patel's energy usage was 25% lower than in 2025. If he used 180 kWh in 2026, how many kWh did he use in 2025?

- A) 225 kWh
- B) 210 kWh
- C) 200 kWh
- D) 240 kWh

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

The sum of all the edge lengths of a solid cube is 72 cm. What is the total surface area of this cube?

- A) 144 cm^2
- B) 36 cm^2
- C) 216 cm^2
- D) 240 cm^2

Question 9**(Total for question 9 is 1 mark)**

Consider the number sequence: 3, 7, 13, 21, 31, ... What is the next number?

- A) 41
- B) 42
- C) 45
- D) 43

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

What number must go into the space to make this correct: $(3.45 + \text{---})^2 = 0.2 \times 0.8 \times 100$?

- A) 0.55
- B) 1.55
- C) 1.25
- D) 0.75

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

A safe has a 4-digit code of different odd digits. The first digit is the largest, the last is the smallest. The number is divisible by 9. What is it?

- A) 9753
- B) 9531
- C) 7531
- D) 9351

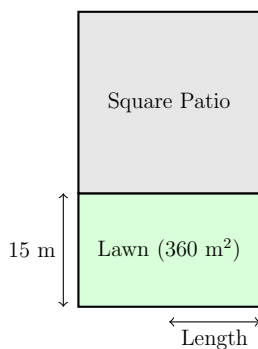
Question 12**(Total for question 12 is 1 mark)**

Beatrice makes x muffins. Arthur makes 8 fewer than Beatrice. Charles makes 3 times as many as Arthur. Find their combined total.

- A) $5x - 8$
 - B) $5x - 32$
 - C) $4x - 16$
 - D) $5x - 24$
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Question 13**(Total for question 13 is 1 mark)**

A grass lawn has an area of 360 m^2 and a width of 15 m . A square patio shares one full side with the length of the lawn. Find the total combined perimeter.



- A) 106 m
- B) 78 m
- C) 126 m
- D) 118 m

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

A spice blend uses 2 parts cumin, 3 parts coriander, and 5 parts paprika. If 150g of coriander is used, what is the total weight of the blend?

- A) 500 grams
- B) 450 grams
- C) 300 grams
- D) 600 grams

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

Given the equation: $4a + 2b = a + 19$. If $a = 3$, what is the value of b ?

- A) 5
- B) 7
- C) 4
- D) 6

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

How many completely different shapes of solid cuboids can be created using exactly 24 individual 1 cm^3 unit cubes?

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

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

A field contains only chickens and sheep. There are 18 heads and 52 legs in total. How many sheep are in the field?

- A) 10
- B) 12
- C) 8
- D) 6

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

Half a class plays football, one-third play netball, one-sixth play both, and 4 pupils play neither. How many pupils are there in total?

- A) 12
 - B) 30
 - C) 36
 - D) 24
-

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

Clara walks a direct 4 km path at 5 km/h. Dan cycles a longer 10 km route and arrives at the exact same time. What was Dan's speed?

- A) 12 km/h
- B) 12.5 km/h
- C) 10 km/h
- D) 15 km/h

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

A quiz has 15 questions. You get +4 for correct, -2 for incorrect, and 0 for unanswered. What is the range between the lowest and highest possible scores?

- A) 60
- B) 30
- C) 75
- D) 90

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

Fiona is one-third the age of her uncle George. In 12 years' time, George will be twice as old as Fiona. How old is Fiona right now?

- A) 8
- B) 10
- C) 14
- D) 12

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

Which one of the following mathematical statements is always true for any negative integer n ?

- A) n^2 is negative
- B) $n + 5$ must be positive
- C) n^3 is negative
- D) $2n > n$

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

Henry saves £ M every week. After 6 weeks, he has saved 40% of a computer's total cost. If $M = 24$, what is the total price of the computer?

- A) £360
- B) £280
- C) £420
- D) £300

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

Consider the following data values: -8, 3, 11, -2, 5, 9. What is the absolute difference between the mean and the median?

- A) 1.5
- B) 1
- C) 2
- D) 0.5

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

At 14:30, a television programme is halfway through. At 14:50, the programme has exactly 10% left to run. At what time did the programme start?

- A) 14:00
- B) 14:10
- C) 14:05
- D) 13:55

Question 26**(Total for question 26 is 1 mark)**

80 candidates sit a music exam. There are 10 more girls than boys. 80% of all candidates pass. If 6 boys fail, how many girls pass?

- A) 32
- B) 39
- C) 35
- D) 28

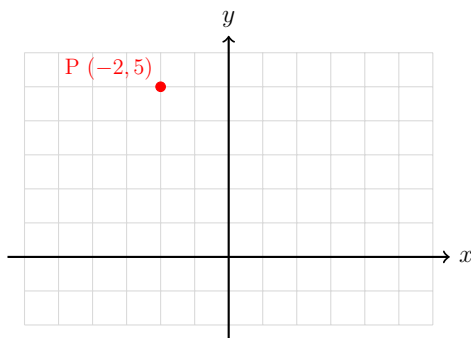
Question 27**(Total for question 27 is 1 mark)**

The total monetary value of Ibrahim's 10p coins is exactly five times the value of his £1 coins. If there are at least 3 of each, what is the minimum total number of coins?

- A) 51
- B) 153
- C) 102
- D) 48

Question 28**(Total for question 28 is 1 mark)**

Shape P is translated 4 units right and 3 units down to form Q. Q is reflected across the y-axis to form R. If a vertex of P was at $(-2, 5)$, where is it on R?



- A) (2, 2)
- B) (-2, 2)
- C) (-6, 2)
- D) (2, -2)

Question 29**(Total for question 29 is 1 mark)**

A bag contains pens that are black, blue, or red. Half are blue and three-tenths are black. If there are 6 red pens, how many total pens are in the bag?

- A) 20
- B) 40
- C) 25
- D) 30

Question 30**(Total for question 30 is 1 mark)**

Two identical regular hexagons are joined perfectly along one full edge. If the total perimeter of the completed combination is 50 cm, what is the edge length of one hexagon?



- A) 5 cm
- B) 6 cm
- C) 4 cm
- D) 8 cm

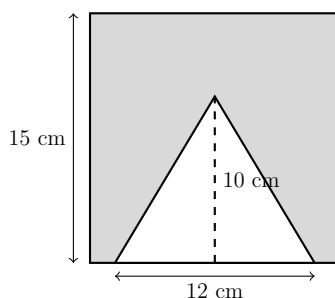
Question 31**(Total for question 31 is 1 mark)**

If $2^{10} \div 2^3 = 2^m$, what is the value of m ?

- A) 13
- B) 5
- C) 30
- D) 7

Question 32**(Total for question 32 is 1 mark)**

A triangle with a base of 12 cm and a height of 10 cm is placed inside a square of side length 15 cm. What shaded area of the square is left uncovered?



- A) 165 cm^2
- B) 60 cm^2
- C) 225 cm^2
- D) 105 cm^2

Question 33**(Total for question 33 is 1 mark)**

Consider the two algebraic equations: $2A + 2B = C$ and $2A + 2B + 3C = 48$. What is the value of C ?

- A) 8
- B) 16
- C) 6
- D) 12

Question 34**(Total for question 34 is 1 mark)**

This year, a library has 15% more books than last year. If the library has 460 books this year, how many books did it have last year?

- A) 391
- B) 415
- C) 400
- D) 420

Question 35**(Total for question 35 is 1 mark)**

The total surface area of a solid cube is 150 cm^2 . What is the total volume of this cube?

- A) 125 cm^3
- B) 25 cm^3
- C) 150 cm^3
- D) 100 cm^3

Question 36**(Total for question 36 is 1 mark)**

Consider the number sequence: 2, 6, 12, 20, 30, ... What is the next number in this sequence?

- A) 40
 - B) 44
 - C) 46
 - D) 42
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Question 37**(Total for question 37 is 1 mark)**

What number must be written in the blank space to make the calculation correct: $(5.2 - \text{---})^2 = 0.3 \times 0.3 \times 100$?

- A) 1.2
- B) 3.2
- C) 4.3
- D) 2.2

Question 38**(Total for question 38 is 1 mark)**

A 4-digit code uses four completely different even digits (excluding 0). The digits are in strict ascending order. The code is a multiple of 4. Which could it be?

- A) 4628
- B) 2486
- C) 2468
- D) 2684

Question 39**(Total for question 39 is 1 mark)**

Jasmin mixes a fruit drink using 1 part blackcurrant juice to 4 parts water. If she wants to make 2.5 litres in total, how many millilitres of juice does she need?

- A) 625 ml
- B) 400 ml
- C) 750 ml
- D) 500 ml

Question 40**(Total for question 40 is 1 mark)**

Given the equation: $5x - y = 2x + 11$. If $x = 4$, what is the value of y ?

- A) 3
 - B) 1
 - C) 5
 - D) 7
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Solutions

1. **C** — Rotation of 180 degrees maps $(x, y) \rightarrow (-x, -y)$.
2. **A** — $1 - \frac{1}{3} - \frac{2}{5} = \frac{4}{15}$ blue $\implies$ Total = 60 $\implies$ Red = $\frac{1}{3} \times 60 = 20$.
3. **B** — $\frac{1}{4}(80) = 20$. 60% of 300 = 180 $\implies$ half = 90. $90 + 20 = 110$.
4. **B** — $4 + 5 = 9$.
5. **B** — $(22 \times 12) - (15 \times 8) = 264 - 120 = 144 \text{ cm}^2$.
6. **C** — Sub Z into equation 2: $Z + 4Z = 45 \implies 5Z = 45 \implies Z = 9$.
7. **D** — $0.75x = 180 \implies x = 240 \text{ kWh}$.
8. **C** — $72 \div 12 = 6 \text{ cm per edge} \implies 6 \times 6^2 = 216 \text{ cm}^2$.
9. **D** — Differences grow by +4, +6, +8, +10 $\implies$ +12 $\implies 31 + 12 = 43$.
10. **A** — $(3.45 + x)^2 = 16 \implies 3.45 + x = 4 \implies x = 0.55$.
11. **B** — $9 + 5 + 3 + 1 = 18$ (divisible by 9).
12. **B** — $x + (x - 8) + 3(x - 8) = 5x - 32$.
13. **C** — Length = 24m. Patio side = 24m. Combined Perimeter = $2 \times (24 + 39) = 126 \text{ m}$.
14. **A** — 1 part = 50g $\implies 10 \times 50 = 500\text{g}$.
15. **A** — $4(3) + 2b = 3 + 19 \implies 12 + 2b = 22 \implies b = 5$.
16. **D** — Factor combinations: $1 \times 1 \times 24$, $1 \times 2 \times 12$, $1 \times 3 \times 8$, $1 \times 4 \times 6$, $2 \times 2 \times 6$, $2 \times 3 \times 4$ (yields 6 variants).
17. **C** — Let s be sheep, c chickens: $s + c = 18$, $4s + 2c = 52 \implies 2s = 16 \implies s = 8$.
18. **A** — $\frac{1}{2} + \frac{1}{3} - \frac{1}{6} = \frac{2}{3}$ play sports $\implies \frac{1}{3}$ play neither = 4 $\implies$ Total = 12.
19. **B** — Time = $4 \div 5 = 0.8 \text{ hours} \implies$ Speed = $10 \div 0.8 = 12.5 \text{ km/h}$.
20. **D** — Max = +60, Min = -30 $\implies$ Range = $60 - (-30) = 90$.
21. **A** — $3F + 12 = 2(F + 12) \implies F = 12$.
22. **C** — The cube of any negative integer remains strictly negative.
23. **A** — Saved = $6 \times 24 = 144 \implies 144 = 0.40 \times \text{Price} \implies \text{Price} = 360$.
24. **B** — Sorted: $[-8, -2, 3, 5, 9, 11] \implies$ Mean = 3, Median = 4 $\implies$ Absolute Difference = 1.
25. **C** — Between 14:30 and 14:50, 20 mins passes, which is $\frac{1}{2} - \frac{1}{10} = 40\%$ of show $\implies$ Total runtime = 50 mins. Running for 25 mins at 14:30 $\implies$ Start time = 14 : 05.

26. **C** — 45 girls, 35 boys. Total pass = 64. Boys pass = 29 $\implies$ Girls pass = 35.
27. **B** — Condition $0.10y = 5(1x) \implies y = 50x$. Minimum condition $x \geq 3 \implies x = 3, y = 150 \implies 150 + 3 = 153$.
28. **B** — After translation: $(2, 2)$. After reflection in y-axis: $(-2, 2)$.
29. **D** — $\frac{1}{2} + \frac{3}{10} = \frac{8}{10} \implies \frac{2}{10}$ total = 6 $\implies$ Total = 30.
30. **A** — Combined perimeter has 10 unshared edges $\implies 50 \div 10 = 5$ cm.
31. **D** — $10 - 3 = 7$.
32. **A** — Square Area = 225. Triangle Area = 60 $\implies 225 - 60 = 165$ cm².
33. **D** — $C + 3C = 48 \implies 4C = 48 \implies C = 12$.
34. **C** — $1.15x = 460 \implies x = 400$.
35. **A** — $6s^2 = 150 \implies s = 5 \implies V = 5^3 = 125$ cm³.
36. **D** — Differences are +4, +6, +8, +10 $\implies +12 \implies 30 + 12 = 42$.
37. **D** — $(5.2 - x)^2 = 9 \implies 5.2 - x = 3 \implies x = 2.2$.
38. **C** — Digits 2, 4, 6, 8 sorted in strict ascending order matching constraints yields 2468.
39. **D** — $\frac{1}{5} \times 2500\text{ml} = 500\text{ml}$.
40. **B** — $5(4) - y = 2(4) + 11 \implies 20 - y = 19 \implies y = 1$.