SOLUTIONS

1. (C)
Let x be the fraction of the second bowl that Goldilocks has eaten.
Each bowl makes up one-third of the porridge. Therefore the fraction of all the porridge that Goldilocks has eaten is $\frac{1}{3}+\frac{1}{3}x$. Therefore

$$\frac{1}{3}+\frac{1}{3}x=\frac{3}{7}.$$

We multiply both sides of this equation by 21. This gives

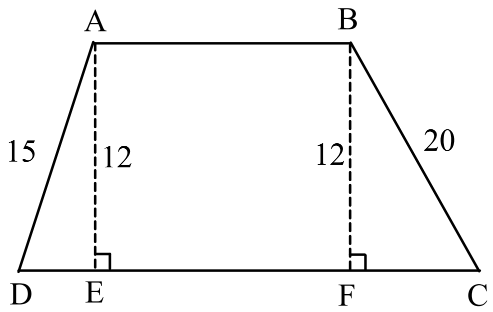
$$7+7x=9.$$

Hence $7x=2$ and therefore $x=\frac{2}{7}$.

2. (A)

$$\begin{array}{r|l} & x-7 \\ x^2+x-1 & x^3-6x^2+11x-6 \\ & x^3 \pm x^2 \mp x \\ & \mp 7x^2 \pm 12x \mp 6 \\ & \mp 7x^2 \mp 7x \pm 7 \\ & 19x-13 \end{array}$$

3. (D)



$DE=9$ & $FC=16$

$$\text{area } =\frac{1}{2}\times 9\times 12+50\times 12+\frac{1}{2}\times 12\times 16$$

$$=54+600+96$$

$$=750$$

4. (C)
Let p be the number of pens that Skye has.
Since Skye has half as many pens as Ishaa, Ishaa has $2p$ pens.
Since Ana has twice as many pens as Skye, Ana also has $2p$ pens.
Therefore Skye, Ishaa and Ana between them have $p+2p+2p=5p$ pens.
So the fraction of all the pens that Skye has is

$$\frac{p}{5p}=\frac{1}{5}.$$

5. (B)

For interacting lines $\frac{a_1}{a_2} \neq \frac{b_1}{b_2}$

$2x+3y-8=0$

$4x+9y-4=0$ given $\frac{a_1}{a_2}=\frac{2}{4}=\frac{1}{2}$

$\frac{b_1}{b_2}=\frac{3}{9}=\frac{1}{3}$

Since $\frac{1}{2} \neq \frac{1}{3} \Rightarrow$ interacting lines

6. (D)

7. (A)

$11\times 3x-y-7=8\times 11 \Rightarrow 33x-y=95$ .....(1)

$14y+x+11=70 \Rightarrow x+14y=59$ ....(2)

1 x14 + 2 gives 463x = 1389

$\Rightarrow x=3$

Subsuming $x=3$ in 2

$14y=56 \Rightarrow y=4$

8. (C)

Let 2 numbers be x & y

$x+y=15$

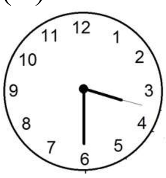
$x-y=\frac{1}{3}$

Difference of their sequence $=x^2-y^2=(x-y)(x+y)$

$=\frac{1}{3}(15)$

$=5$

9. (D)



Hours hand b/w 3 and 4 minute hand at 6.

Whole circle in 360°

$\Rightarrow$ angle b/w 2 consecutive number in $\frac{360}{12}=30^\circ$

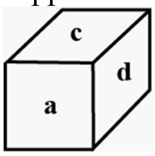
So, $15+30+30=75^\circ$

10. (B)

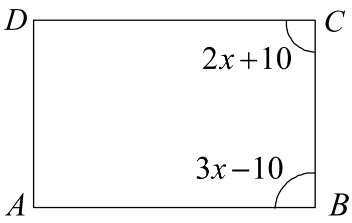
$5^2+12^2=13^2$ (Pythagoras)

$8^2+15^2=17^2$

$9^2 + 40^2 = 41^2$
$x^2 = 7^2 + 24^2 = 625$
$x = 25$

11. (D)
b is opposite to d
a is opposite to f
e is opposite to e
i.e  is correct

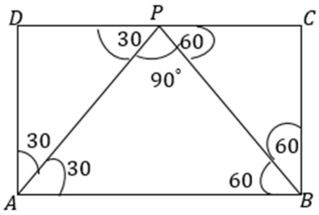
12. (C)
8^{th} from start is in centre
i.e. 7 people ahead & 7 behind
$D \Rightarrow 7 + 1 + 7 = 15$

13. (A)


$2x + 10 + 3x - 10 = 180^\circ$

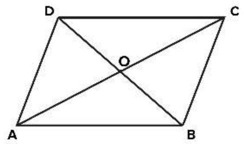
$5x = 180$ $\qquad x = \frac{180}{5} = 36^\circ$

14. (B)
By properties of parallelogram

15. (A)


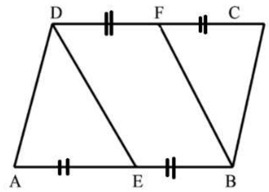
AP Bisect angle $A \Rightarrow \angle DAP = 30^\circ$
$\angle A + \angle B = 180^\circ \Rightarrow \angle B = 120^\circ$
BP bisects $\angle B \Rightarrow \angle PDA = \angle PBC = 60^\circ$
Now $\angle PAB = \angle DPA$ (alternate angles)
Parallelogram $\angle CPB = \angle PBA = 60^\circ$ (alternate angles)
Now in $\angle ADP$, $\angle A = \angle P$
$\Rightarrow$ AD = DP (Equal angles gives equal side in triangles)

16. (B)



Diameter of square are perpendicular to each other

17. (C)



$EB = \frac{1}{2}AB = \frac{1}{2}DC \quad = DF$

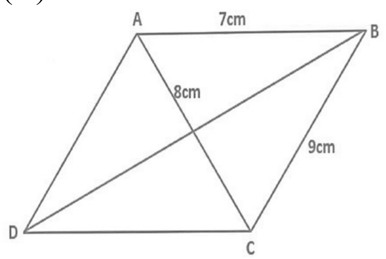
Also since AB||PC

$\Rightarrow$ EB || DF

$\Rightarrow$ One pair of opposite sides of quadrilateral of EBFD is equal & parallel

$\Rightarrow$ EBFD is parallelogram

18. (A)



By parallelogram Formula of diagonals,

$AC^2 + BD^2 = 2\left(AB^2 + BC^2\right)$

$\Rightarrow 8^2 + BD^2 = 2\left(7^2 + 9^2\right) \quad \Rightarrow 64 + BD^2 = 2(49 + 81) = 260$

$\Rightarrow BD^2 = 260 - 64 = 196 \quad \Rightarrow BD = 14$ cm $\quad \therefore$ The length of other diagonal = 14 cm

19. (A)

Area of rectangle $= b \times h$

$35y^2 + 13y - 12 = 0 \Rightarrow 35y^2 - 15y + 28y - 12 = 0 \quad \Rightarrow \quad 5y(7y-3) + 4(7y-3) = 0$

$\Rightarrow \quad (7y-3)(5y+4) = 0 \quad \Rightarrow$ Breadth $= 7y - 3$

$\Rightarrow$ Length $= 5y + 4$

20. (B)

$4(x-y)^2 - 12(x-y)(x+y) + 9(x+y)^2$

Let $2(x-y) = A \quad \Rightarrow \quad A^2 - 2AB + B^2 = (A-B)^2$

$3(x+y) = B \quad \Rightarrow \quad \left(2(x-y) - 3(x+y)\right)^2$

Square root is $(x + 5y)$