THE STUDENT HUB

Sample Exam 2 – Solutions

Session 2 **Total: 75 marks**

SECTION I

1. Write in figures:
   One million, eighty-seven thousand and six. [1]

   One million = 1 000 000
   Eighty-seven thousand = 87 000 +
   Six = 6
   1 087 006

   Answer_____ 1 087 006 _____

2. Which digit in the numeral 87 293 represents HUNDREDS? [1]

   Placing the digits according to their place values, we note:

TTH	TH	H	T	O
10,000	1,000	100	10	1
8	7	2	9	3

   The HUNDREDS DIGIT is 2.

   Answer_____ 2 _____

3. Round 7 465 to the nearest thousand. [1]

When rounding a number to the nearest thousand, the most important figure that we must look at is the **HUNDREDS.** Once that figure is 5 or more, then we round it up to the next thousand. If it is 4 or less, then we round it down to the lower thousand. For example:

Th	H	T	O
7	4	6	5

For the question, the hundreds figure in 7 465 is 4, which is less than 5. Therefore, we round it down to the lower thousand.

Answer_____ 7000 _____

4. Calculate:

712×16 [1]

$712 \times 16 = (700 + 12) \times 16$

$= (700 \times 16) + (12 \times 16)$

$= 11\,200 + 192$

$= 11\,392$

Answer_____ 11 392 _____

5. Circle the SMALLEST decimal fraction in the set below.

0.25 0.68 0.082 (0.07)

[1]

We enter the decimal fractions in a decimal place value chart as follows:

Ones	Tenths	Hundredths	Thousandths
1	0.1	0.01	0.001
0	2	5	0
0	6	8	0
0	0	8	2
0	0	7	0

The place values in order of size is: Tenths, Hundredths, Thousandths.

0.68 has 6 tenths

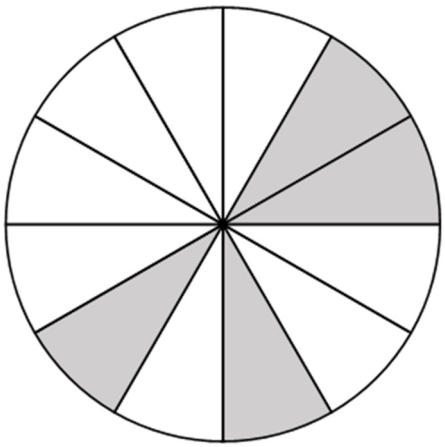
0.25 has 2 tenths

0.082 has 0 tenths

0.07 has 0 tenths

Therefore, 0.07 is the smallest decimal fraction.

6. Express the SHADED PART as a COMMON FRACTION of the whole shape. [1]



The total number of segments, both shaded and un-shaded, in the shape is 12.

The number of shaded segments is 4.

The fraction of the shape that is shown shaded $= \frac{\text{Number of shaded segments}}{\text{Total number of segments}}$

$= \frac{4}{12}$

$= \frac{1}{3}$

Answer_____$\frac{1}{3}$_____

7. Complete the table below. [1]

Common Fraction	Percentage
$\frac{7}{20}$	35%
$\frac{3}{4}$	75%

To complete the table, we have to express 35% as a fraction.

$35\% = \frac{35}{100}$

$= \frac{7}{20}$

8. Write in the box the number that CORRECTLY completes the number sentence. [1]

$$\frac{5}{6} = \frac{\boxed{15}}{18}$$

If we multiply the numerator and denominator of a fraction by the same number we obtain an equivalent form.

In this example, the number is 3 because $6 \times 3 = 18$

Therefore, the number in the box is 15.

9. Arrange the fractions below in ASCENDING order. [1]

$\frac{7}{12}$, $\frac{1}{4}$, $\frac{5}{6}$, $\frac{2}{3}$

The LCM of the given fractions is 12.

$\frac{7}{12}$	$\frac{1}{4}$	$\frac{5}{6}$	$\frac{2}{3}$
$\frac{7 \times 1}{12}$	$\frac{1 \times 3}{12}$	$\frac{5 \times 2}{12}$	$\frac{2 \times 4}{12}$
$\frac{7}{12}$	$\frac{3}{12}$	$\frac{10}{12}$	$\frac{8}{12}$

Answer_____ $\frac{1}{4}$, $\frac{7}{12}$, $\frac{2}{3}$, $\frac{5}{6}$ _____

10. A novel has 441 pages. Remi read $\frac{4}{7}$ of those pages.

How many pages does he have to read to complete the novel? [1]

Fraction of pages he must read to complete the novel $= 1 - \frac{4}{7}$

$= \frac{3}{7}$

Number of pages he must read to complete the novel $= \frac{3}{7} \times 441$

$= 189$ pages

Answer_____ 189 _____ pages

11. A daily planner costs $75.25. What is the cost of 6 daily planners? [1]

Cost of 1 daily planner = $75.25

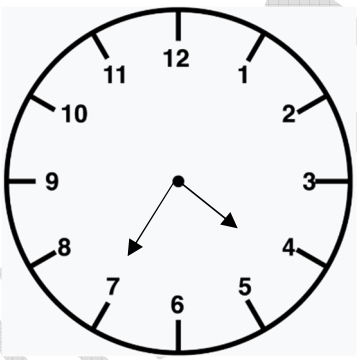
Cost of 6 daily planners = 6 × $75.25

= $451.50

Answer $_____ 451.50 _____

12. The time is shown below on the analog clock. Write down the time on the digital clock. [1]

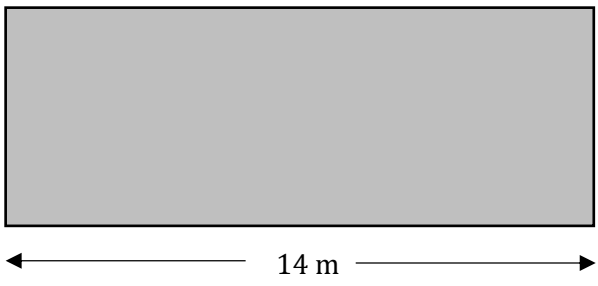
Analog clock



Digital clock

4 : 35

13. A rectangular garden bed is 14 metres long and has an area of 84 square metres. [1]



How wide is the garden bed?

Area of garden bed = 84 m^2

Area of garden bed = Length × Width

84 m^2 = Length × Width

84 m^2 = L × W

$$W = \frac{Area\ of\ garden\ bed}{Length\ of\ garden\ bed}$$

$$W = \frac{84\ m^2}{14\ m}$$

$$W = 6\ m$$

Answer_____ 6 _____ m

14. Which unit may best measure the sugar added to a cup of tea? [1]

Answer_____ grams _____

15. How many 300 ml cups can be filled completely from 2.6 litres of sorrel? [1]

Using the conversion:

1000 ml = 1 L

Converting L to ml we multiply by 1000:

$2.6 \times 1000 = 2600$ ml

Number of 300 ml cups that can be filled completely = $2600 \div 300$

= 8 cups

Answer_____ 8 _____ cups

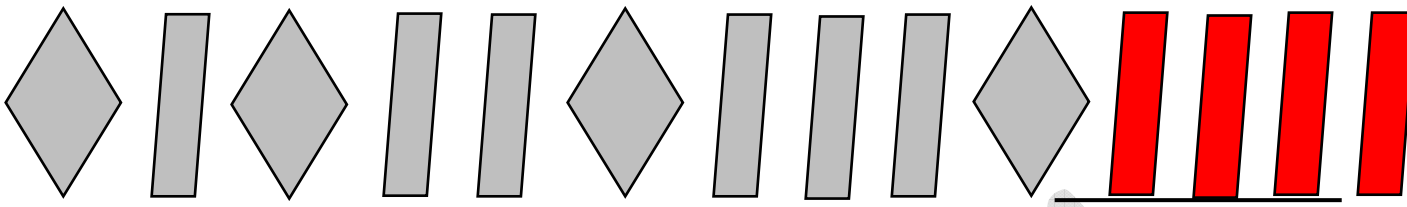
16. Write down the name the solid with one curved face, one flat circular face, one edge and one vertex.

[1]

Name:	Cone
Faces:	2 (1 flat face and 1 curved face)
Edges:	1
Vertices:	1

Answer_____ cone _____

17. Complete the pattern showing the next four shapes. [1]



18. The incomplete tally chart below shows the 4 apps which students downloaded on their phone.

App	Tally	Frequency
YouTube	𝍸 ||||	9
Instagram	𝍸 𝍸 ||	12
Facebook	𝍸 |||	8
Twitter	||	2

Complete the tally chart to show the number of students who downloaded Instagram. [1]

19. Find the mean of the numbers below. [1]

16	14	45	23	62

The mean is the average of a set of numbers. We must divide the sum of the numbers by the number of values in the set of numbers.

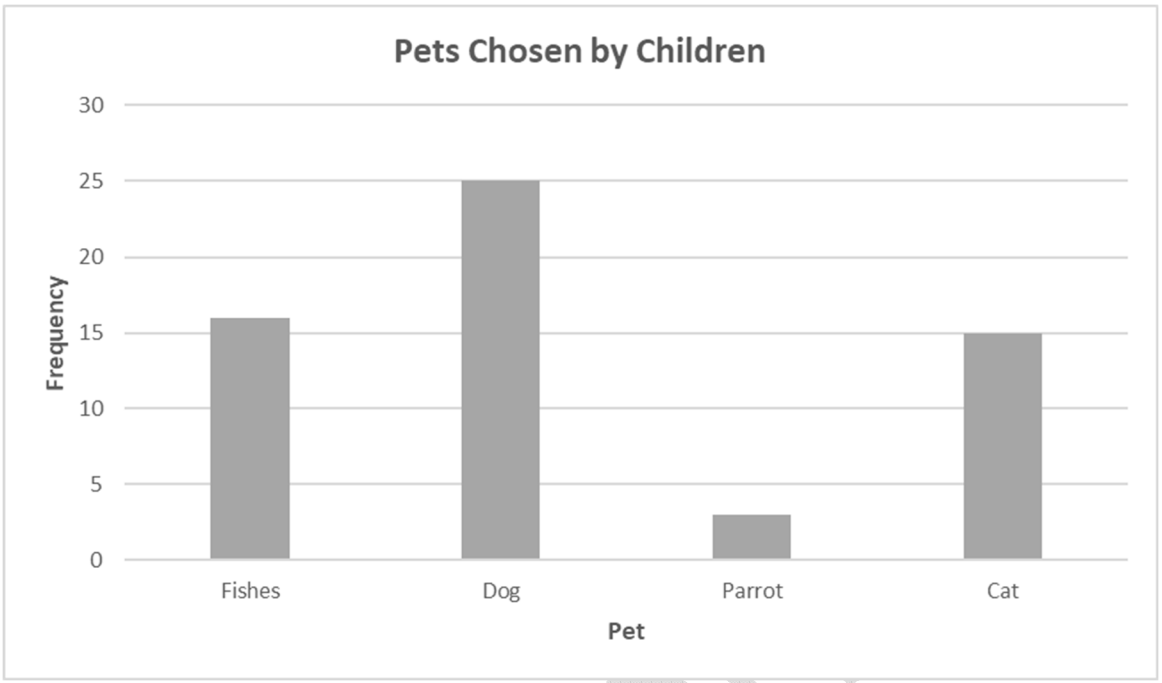
$$\frac{The\ sum\ of\ the\ values}{The\ number\ of\ values\ in\ the\ set} = \frac{16 + 14 + 45 + 23 + 62}{5}$$

$$= \frac{160}{5}$$

$$= 32$$

Answer_____ 32 _____

20. The chart below shows the pets chosen by some children.



Which pet represents the mode? [1]

Modal means the one that occurs most often.

Based on the table above, the modal pet is Dog since it was chosen by the largest number of students.

Answer_____ dog _____

SECTION II

21. Express the answer to the sum below as a decimal fraction. [2]

$$\frac{7}{10} + 4 + \frac{3}{100}$$

$\frac{7}{10} = 0.7$

$\frac{3}{100} = 0.03$

Ones	Tenths	Hundredths
1	0.1	0.01
0	7	0
+ 4	0	0
0	0	3
4	7	3

Answer_____ 4.73 _____

22. Write the correct value in the box to complete the number sentence. [2]

$2 + \frac{3}{5} = 7 - \boxed{4\frac{2}{5}}$

$2 + \frac{3}{5} = 2\frac{3}{5}$

$2\frac{3}{5} = 7 - \square$

$7 - 2\frac{3}{5} = \square$

$7 - 2\frac{3}{5} = 6\frac{5}{5} - 2\frac{3}{5}$

$= 4\frac{2}{5}$

23. Footballers from the school's team ran laps around the field as warm up for their training sessions. The number of laps made and the number of footballers is stated below.

Number of laps ran	4	5	6	7
Number of footballers	2	4	3	2

How many footballers ran more than 5 laps around the field? [2]

Number of footballers who ran around the field 6 times = 3

Number of footballers who ran around the field 7 times = 2

∴ No. of footballers who ran around the field more than 5 times = 3 + 2

= 5 footballers

Answer_____ 5 _____ footballers

24. One egg cost $2.50 sold separately. One crate containing a dozen eggs costs $24.50.
Calculate the difference between a dozen eggs sold separately and a crate of eggs. [2]

Cost of one egg sold separately = $2.50

Cost of dozen eggs sold separately = 12 × $2.50

= $30.00

Difference between a dozen eggs sold separately and a crate of eggs = $30.00 – $24.50

= $5.50

Answer $_____ 5.50 _____

25. Each bus that carries students on a field trip has 24 seats. If 13 buses have arrived, how many more buses must arrive in order to carry 456 students. [2]

Number of students to be transported in 13 available buses = 13 × 24

= 312 students

Number of students that still need transport = 456 – 312

= 144 students

Number of buses needed to transport remaining 144 students = 144 ÷ 24

= 6 buses

Answer_____ 6 _____ buses

26. Chelsea spent $\frac{1}{3}$ of her weekly salary on groceries, she then placed $\frac{2}{5}$ of the remaining money in a savings account. She now has \$960.00 remaining. What is Chelsea's total weekly salary? [3]

Fraction spent from weekly salary $= \frac{1}{3}$

Remaining fraction after spending $= 1 - \frac{1}{3}$

$= \frac{2}{3}$

Fraction placed in a savings account $= \frac{2}{5} \times \frac{2}{3}$

$= \frac{4}{15}$

Fraction of Chelsea's weekly salary that was spent and saved $= \frac{1}{3} + \frac{4}{15}$

$= \frac{3}{5}$

So, the fraction she now has remaining $= 1 - \frac{3}{5}$

$= \frac{2}{5}$

But Chelsea has \$960.00 remaining.

Therefore, $\frac{2}{5}$ of Chelsea's weekly salary $= \$960$

Chelsea's total weekly salary $= \frac{\$960}{1} \times \frac{5}{2}$

$= \$2400$

Answer \$_____ 2400 _____

27. A Simpsons marathon started at 9:45 a.m. and ended at 6:25 p.m.

How many HOURS did the marathon last? [3]

We need to subtract 9:45 a.m. from 6:25 p.m.

Since 6:25 p.m. is in the p.m period we can give it a +12 hour boost (since the a.m period is 12 hours) and rewrite it as 18:25.

Hours	Minutes
17	85
~~18~~	~~25~~
− 9	45
8	40

The marathon ran for 8 hours and 40 minutes.

8 hours and $\frac{40}{60}$ hours

Answer_____ $8\frac{2}{3}$ _____ hours

28. When a number was divided by 13, the quotient was 12 more than 44 and the remainder was 5. What was the number? [3]

Quotient $= 44 + 12$

$= 56$

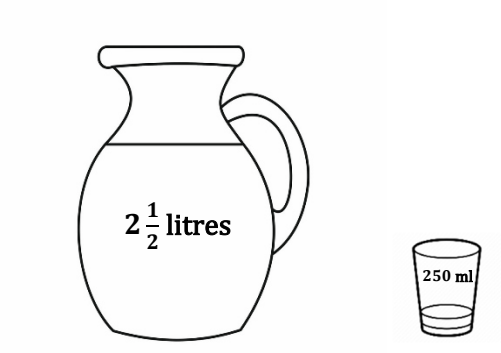
Quotient multiplied by 13 $= 56 \times 13$

$= 728$

Adding the remainder gives the number: $728 + 5 = 733$

Answer_____ 733 _____

29. A pitcher of lemonade and a cup are shown below. Daniel and his 6 friends each drank a cup of the lemonade. What percent of lemonade is left in the pitcher? [3]



Pitcher Cup

$2\frac{1}{2}$ litres $= 2500$ ml

Number of cups drank = Daniel + his 6 friends

$= 1 + 6$

$= 7$

Volume of lemonade drank from the pitcher $= 7 \times 250$

$= 1750$ ml

Volume of lemonade remaining in the pitcher $= 2500 - 1750$

$= 750$ ml

Percentage of lemonade remaining in the pitcher $= \frac{750}{2500} \times 100$

$= 30\%$

Answer_____ 30 _____ %

30. A family is driving 35 km from their town to their relative's place. 6.5 km before the half-way point, they stop to have lunch. How many kilometres do they still have to drive after their lunch? [2]

The half-way point = 35 ÷ 2

= 17.5 km

6.5 km before the half-way point is at 11 km.

Therefore, the distance they still have to drive after lunch = 35 km – 11 km

= 24 km

Answer_____ 24 _____ kilometres

31. 7 men can build a gazebo in 6 days.

At the same rate, how long would 3 men take to build an identical gazebo? [2]

Time taken by 7 men = 6 days

Time 1 man would take = 7 × 6

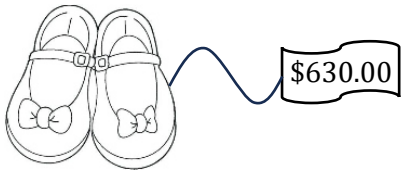
= 42 days

Time 3 men would take = 42 ÷ 3

= 14 days

Answer_____ 14 _____ days

32. Brianna wishes to buy the pair of shoes shown below. She saved $40.00 each week for 6 weeks. How many more weeks does she need to save for to make up the money to buy the shoes? [2]



Cost of shoes = $630.00

Amount saved per week = $40.00

Amount saved in 6 weeks = 6 × $40

= $240.00

Amount of money still needed to purchase shoes = $630 – $240

= $390

Number of weeks Brianna still has to save money to purchase the shoes = 390 ÷ 40

= 9.75 weeks

Answer_____ 10 _____ weeks

33. Halle and Tatiana played a game where they both turned in an **anticlockwise** direction. Halle started the game facing West whilst Tatiana started the game facing South. Halle made quarter turns while Tatiana made half turns.

Complete the table below to show the direction each girl faced after each turn. [3]

Turn Number	Halle	Tatiana
0 (Start)	**West**	**South**
1	South	North
2	East	South
3	North	North
4	West	South

34. 112 stickers were shared among Aidan, Kelvin and Timothy. Timothy got 52 stickers and the rest was divided between Kelvin and Aidan so that Aidan got twice as many stickers as Kelvin.
How many stickers did Aidan get? [3]

Number of stickers Timothy got = 52 stickers

Number of stickers shared between Kelvin and Aidan = 112 – 52

= 60 stickers

Kelvin Aidan

Total shared between them = 60 stickers

Total parts = 3 bars = 60 stickers

1 bar = $\frac{60}{3}$

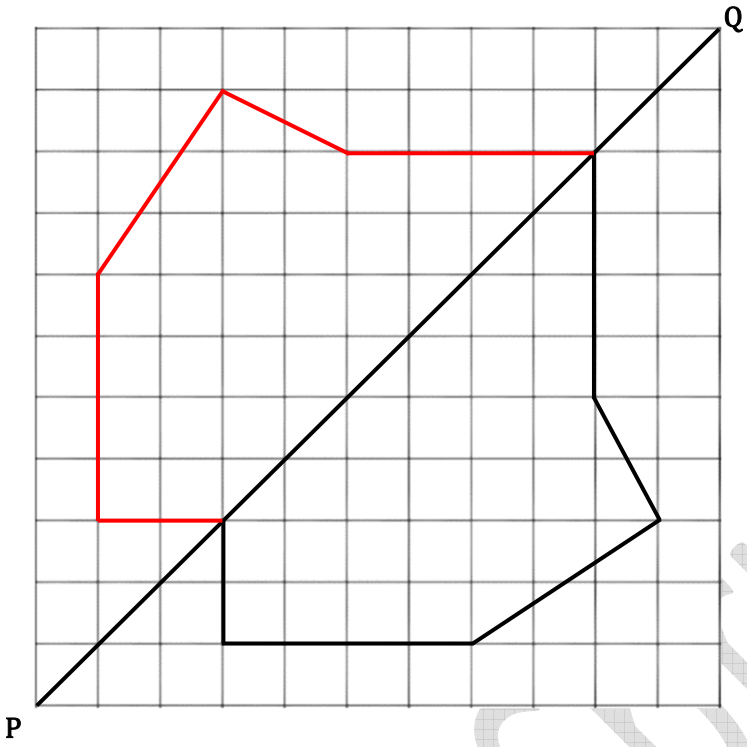
= 20 stickers

Number of stickers Aidan got = 2 × 20

= 40 stickers

Answer_____ 40 _____ stickers

35. Complete the shape shown below on the grid below using PQ as the line of symmetry. [2]



36. Complete the table below with the correct names of solids or plane shapes to match the description given. [3]

Plane Shape/Solid	Description/Properties
Isosceles Triangle	Three sides, two of which are equal.
Parallelogram	Two pairs of parallel lines, no right angles, opposite sides equal in length.
Cuboid	12 edges, six faces that are not all equal, eight vertices

SECTION III

37. Avery bought 300 apples. 45% were ripe, $\frac{3}{10}$ were green and the remainder had to be thrown away. He paid \$2 for each apple. He sold the ripe and green apples for \$2.50 each.
Calculate his profit or loss as a percentage of the cost price. [4]

Total number of apples = 300 apples

Cost Price = 300 × \$2

= \$600

Fraction of apples sold = $\frac{45}{100} + \frac{3}{10}$

$= \frac{45 + 30}{100}$

$= \frac{75}{100}$

$= \frac{3}{4}$

Number of apples sold = $\frac{3}{4} \times 300$

= 225 apples

Selling Price of 1 apple = \$2.50

Money obtained from selling 225 apples = 225 × \$2.50

= \$562.50

A loss occurred since the selling price is less than the cost price.

Loss = Cost Price – Selling Price

= $600.00 – $562.50

= $37.50

Loss as a percentage of the cost price $= \frac{\text{Loss}}{\text{Cost Price}} \times 100$

$= \frac{37.50}{600} \times 100$

$= 6.25\%$

Answer_____ 6.25 _____ %

38. A class bought pens and resold them for $18.00 to students at school. A student who bought two pens was given one additional pen free. After all the pens were sold, the class made a total of $936.00. If 20 pens were given free, how many students bought only one pen? [4]

Selling Price of 1 pen = $18.00

Quantity of money earned through selling pens = $936.00

Number of pens that were sold = $936.00 ÷ $18.00

= 52 pens

If one additional pen was given out when a student bought two pens and 20 free pens were given out then;

Number of students who bought 2 pens = 20 students

Number of pens bought by these students = 20 × 2

= 40 pens

So, number of students who bought only one pen = 52 – 40

= 12 students

Answer_____ 12 _____ students

39. A wall is 7m long and 4m high.

(a) Write its measurements in centimetres. [1]

Length = _____ 700 _____ cm

Height = _____400 _____ cm

(b) The wall is covered with tiles. A tile measures 175 cm by 50 cm. How many tiles were used to cover the wall completely? [2]

Area of wall = Length × Width

= 700 × 400

= 280 000 cm^2

Area of one tile = Length × Width

= 175 × 50

= 8 750 cm^2

No. of tiles used to cover the wall completely = $\frac{\text{Area of wall}}{\text{Area of one tile}}$

= $\frac{280\,000}{8\,750}$

= 32 tiles

Answer_____ 32 _____ tiles

(c) If one tile costs $16, how much did it cost to tile the wall? [1]

One tile cost $16.

Cost of tiling the wall = Number of tiles needed to tile the wall × Cost of 1 tile

$= 32 \times 16$

$= \$512$

Answer $\$$_____ 512 _____

40. Identical rectangular cards are placed on a straight line at an equal distance from each other, as shown below. The total distance from the first card to the third card is 35 cm. The distance between each card is 10 cm. [4]

What is the distance from the 5th card to the 20th card?

Number of spaces between 1st and 3rd card = 3 – 1
= 2 spaces

Distance of space between 1st and 3rd card = 10 × 2
= 20 cm

Distance from 1st card to 3rd card = Distance of spaces + Width of 3 cards
35 cm = 20 + Width of 3 cards
Width of 3 cards = 35 – 20
= 15 cm

Width of 1 card = 15 ÷ 3
= 5 cm

Number of spaces from the 5th card to the 20th card = 20 – 5 = 15 spaces

= (20 – 5) + 1 .....the 20th card is included

= 16 cards

Distance from the 5th card to the 20th card = Distance of spaces + Width of 16 cards

= (15 × 10) + (16 × 5)

= 150 + 80

= 230 cm

Answer_____ 230 _____ cm