

Prime Numbers, HCF and LCM

- Q1 (a) Write 2016 as a product of prime factors. [M-16/22/Q13] [3]
- Q2. Find the lowest common multiple (LCM) of 24 and 32. [M-15/22/Q2] [2]
- Q3. Calculate $\sqrt{120} + 3.8^2 - 25$ [S-17/22/Q4] [1]
- Q4. Find the lowest common multiple (LCM) of 20 and 24. [S-17/23/Q3] [2]
- Q5. Find the lowest common multiple (L.C.M) of 36 and 48. [S-16/21/Q6] [2]
- Q6. 8, 9, 10, 11, 12, 13, 14, 15, 16, from the list of numbers, write down,
(a) the square numbers, [S-16/22/Q5] [1]
(b) a prime factor of 99. [S-16/23/Q1] [1]
- Q7. Find the cube root of 4913. [S-16/23/Q10] [2]
- Q8. Find highest common factor (H.C.F) of 56 and 70. [W-16/23/Q7] [2]
- Q9. Write these in order of size, smallest first.
 0.6^3 0.22 $\sqrt{0.09}$ 0.4^2 [W-16/23/Q7] [2]
- Q10. Calculate: $2^3 - \sqrt{10+42}$ [W-16/23/10(a)] [1]
- Q11. The thickness of one sheet of paper is 8×10^{-3} cm. [S-17/21/Q2] [1]
Work out the thickness of 250 sheets of paper.
- Q12 (a) Write 30 as a product of its prime factors. [S-15/21/Q17] [2]
(b) Find the lowest common multiple (LCM) of 30 and 45. [S-15/21/Q17] [2]
- Q13. Work out the highest common factor (HCF) of 36 and 90. [W-15/21/Q7] [2]
- Q14. Find the highest common factor (HCF) of 60 and 90. [0607] [W-15/23/Q1] [1]
- Q15. 11, 12, 13, 14, 15, 16, from the list of number write down.
(a) the factors of 60 [W-15/23/Q5] [1]
(b) the prime numbers. [W-15/23/Q5] [1]
- Q16. Write the following in order of size, smallest first.
 π , 3.14 , $\frac{22}{7}$, 3.142 , 3 [W-14/21/Q2] [2]
- Q17 (a) Write 90 as a product of prime factors. [W-14/22/Q15] [2]
(b) Find the lowest common multiple (L.C.M) of 90 and 105. [W-14/22/Q15] [2]
- Q18. Write the following in order of size, smallest first.
 0.34 $\sqrt{0.6}$ 0.6^2 0.7^3 [W-14/23/Q2] [2]
- Q19. The sum of the prime numbers less than 8 is equal to 17.
(a) Find the sum of the prime numbers less than 21. [S-13/23/Q11] [2]
(b) The sum of the prime numbers less than x is 58. Find an integer value of x .

Four Rules of Calculations
and Time & distance and Speed. Exercise 1.2

Q1 Without using calculator, work out $3\frac{1}{3} \div 2\frac{1}{2}$. [3]

You must show all your working and give your answer as a mixed number in its simplest form. M-17/22/Q8

Q2 Without using your calculator, work out $1\frac{7}{12} + \frac{13}{20}$
You must show all your working and give your answer [3]
as a mixed number in its simplest form. M-16/22/Q9

Q3 Without using your calculator, work out $2\frac{7}{9} \div \frac{5}{6}$. [4]
Give your answer as a fraction in its lowest form.
You must show each step of your working. M-15/22/Q16

Q4 The thickness of one sheet of paper is 8×10^{-3} cm. [1]
Work out the thickness of 250 sheets of paper. S-17/21/Q2

Q5 Without using a calculator, work out $1\frac{2}{3} + \frac{5}{7}$ [3]
Write your all steps of working and give your answer as a mixed number in its simplest form. S-17/21/Q7

Q6 Without using a calculator, work out $\frac{5}{6} - \frac{1}{2}$ [2]
Show all the steps of your working and give your answer as a fraction in its simplest form. S-17/22/Q9

Q7 Without using your calculator, work out $\frac{11}{12} - (\frac{3}{4} - \frac{2}{3})$ [4]
You must show all your working and give your answer as a fraction in its simplest form. S-17/23/Q19

Q8 A train leaves Zurich at 2240 and arrives in Vienna at 0732 the next day. Work out the time taken. S-16/21/Q1 [1]

Q9 Without using a calculator, work out $\frac{6}{7} \div 1\frac{2}{3}$ [3]
Show all your working and give your answer as a fraction in its lowest terms. S-16/21/Q16

Q10 A car of length 4.3 m is travelling at 105 km/h. It passes a bridge of length 36 m. S-16/21/18 [3]

Calculate the time, in seconds, it takes to pass over the bridge completely.

Q11 Calculate $\frac{3.07 + 2^4}{5.03 - 1.79}$ S-16/22/Q2 [1]

Q12 Without using a calculator, work out $2\frac{5}{8} \times \frac{3}{7}$. S-16/22/Q14
Show all your working and give your answer as mixed number in its lowest terms. [3]

Four rules of Calculations and time, distance and speed. Exercise - 1.2

Q13 Without using a calculator, work out $\frac{1}{2} \times 1\frac{1}{5}$
Show all your working and give your answer as a fraction [2]
in its lowest form. [S-16/23/Q5]

Q14 Write down the temperature which is 5°C below -2°C. [W-16/21/Q1] [1]

Q15 Work out $\frac{2}{3} - \frac{1}{4}$, giving your answer as a fraction in its lowest terms. Do not use a calculator and show all the steps of your working. [W-16/21/Q4] [2]

Q16 Without using a calculator, work out $\frac{3}{4} + \frac{2}{3} - \frac{1}{8}$ [4]
you must show all your working and give your answer as a mixed number in its simplest form. [W-16/22/Q14]

Q17 Without using a calculator, work out $\frac{3}{5} + \frac{1}{6}$
write down all the steps of your working and give your answer as a fraction in its simplest form. [W-16/23/Q5] [2]

Q18 The table shows the temperatures in five places at 10am one day in January.

Place	Temperature °C
Helsinki	-7
Chicago	-10
London	3
Moscow	-4
Bangkok	26

(a) Which place was coldest. --- [1]

(b) At 2pm, the temperature in Helsinki had increased by 4°C. Write down the temperature in Helsinki at 2pm. -- [1]

[S-17/21/Q4]

Q19 Without using a calculator, work out $1\frac{7}{8} \div \frac{5}{9}$ [3]
write down all the steps of your working and give your answer as a mixed number in its simplest form. [S-15/23/Q8]

Q20 At noon the temperature was 4°C,
At midnight the temperature was -5.5°C,
Work out the difference in temperature between noon and midnight. [S-15/21/Q1] [1]

Q21 Use your calculator to work out $\sqrt{10 + 0.6 \times (8.3^2 + 5)}$ [1]
[S-15/21/Q2]

Q22 Without using a calculator, work out $1\frac{4}{5} \div \frac{3}{7}$
show all your working and give your answer as a fraction in its lowest form. [S-15/21/Q9] [3]

Q23 A car travels a distance of 1280 metres at an average speed of 64 km per hour. [5-15/21/Q13]

Calculate the time it takes for the car to travel this distance. Give your answer in seconds. [3]

Q24 A doctor starts work at 2040 and finishes work at 0610 the next day. How long is the doctor at work. [1]

Give your answer in hours and minutes. [5-15/22/Q2]

Q25 Without using a calculator, work out $\frac{4}{5} \div 2\frac{2}{3}$. Write down all the steps of your working and give your answer as a fraction in its simplest form. [5-15/22/Q12] [3]

Q26 Without using a calculator, work out $1\frac{7}{8} \div \frac{5}{9}$. Show all your working and give your answer as a fraction in its lowest form. [5-15/23/Q8] [3]

Q27 At midnight the temperature in Newton was -8°C . At noon the next day the temperature in Newton was 9°C . Work out the rise in temperature from midnight to noon. [1]

Q28 A car travels at 56 km/h. Find the time it takes to travel 300 metres. Give your answer in seconds correct to the nearest second. [W-15/21/Q1] [4]

Q29(a) Work out $16 - 8 \div 2 + 2 \times 4$ [0607 [W-15/22/Q1(a)] [1]

Q30 Insert one pair of brackets to make the statement correct:
 $5 - 2 + 3 \times 2 = -5$ [0607 [W-15/23/Q2] [1]

Q31 Write down the difference in temperature between 8°C and -9°C . [W-15/22/Q1] [1]

Q32 Jason receives some money for his birthday. He spends $\frac{11}{15}$ of the money and has \$14.40 left. Calculate how much money he received for his birthday. [W-15/22/Q10] [3]

Q33 Without using your calculator, work out $2\frac{1}{4} - \frac{11}{12}$. You must show all your working and give your answer as a fraction in its lowest terms. [8] [W-15/22/Q12]

Q34 Calculate: $\frac{2.07 - 1.89}{5.71 - 3.92}$ [W-15/23/Q2] [1]

Q35 Workout $\frac{2}{3} + \frac{1}{6} - \frac{1}{4}$, giving your answer as a fraction in its lowest form. Do not use a calculator and show all the steps of your working. [W-15/23/Q15] [3]

Q36 Use your calculator to workout $\sqrt{\frac{3}{4}} + 2^{-1}$. Give your answer correct to 2 decimal places. [S-14/21/Q1] [2]

Q37, Write the following in order of size, smallest first. $0.5^2, 0.5, 0.5^3, \sqrt[3]{0.5}$ [S-14/21/Q5] [2]

Q38 A bus company has the operating times \rightarrow
 (a) Calculate the total number of hours that the bus company operates in a week. [3]

Day	Starting	Finishing Time
Saturday	0600	2400
Sunday	0600	2400
Monday	0600	2400
Tuesday	0600	2400
Wednesday	0600	2400
Thursday	0600	2400
Friday	1300	2400

(b) Write the starting time on Friday in the 12-hour clock. [1]

[S-14/21/Q9] \rightarrow

Q39 Calculate: $\frac{\sqrt[3]{16}}{1.32}$ [S-14/22/Q1] [1]

Q40. Write the following in order, smallest first, $\sqrt{0.1}, \frac{43}{201}, 2\frac{1}{2}\%, 0.2$ [S-14/22/Q7] [2]

Q41 Without using your calculator, workout $\frac{5}{6} - (\frac{1}{2} \times 1\frac{1}{2})$. Write down all the steps of your working. [S-14/22/Q8] [3]

Q42 In March 2011, the average temperature in Kiev was 3°C . In March 2012, the average temperature in Kiev was 19°C lower than in March 2011. [S-14/23/Q1] [1]
 Write down the average temperature in Kiev in March 2012.

Q43 Without using a calculator, workout $1\frac{1}{4} - \frac{7}{9}$, write down all the steps in your working. [S-14/23/Q10] [3]

Q44 Without using a calculator, workout $\frac{1}{7} + \frac{1}{6}$. Write down all the steps in your working and give your answer as a fraction in its simplest form. [W-14/21/Q5] [2]

Four rules of calculations / Time / distance & speed; Exercise 1.2 Page - 5

Q45 Write 2.8×10^2 as an ordinary number, [W-14/21/Q9(a)] [1]

Q46 Insert one pair of brackets only to make the following statement correct: $6 + 5 \times 10 - 8 = 16$ [W-14/22/Q1] [1]

Q47 Calculate: $\frac{8.24 + 2.56}{1.26 - 0.72}$ [W-14/22/Q2] [1]

Q48 Without using a calculator, work out $1\frac{1}{6} \div \frac{7}{8}$
Show all your working and give your answer as a fraction in its lowest form. [W-14/22/Q8] [3]

Q49 A train takes 65 minutes to travel 52 km.
Calculate the average speed of the train in kilometres per hour. [W-14/23/Q5] [2]

Q50 One January day in Munich, the temperature at noon was 3°C .
At midnight the temperature was -8°C .
Write down the difference between these two temperatures. [S-13/21/Q1] [1]

Q51 Show that $1\frac{1}{2} \div \frac{3}{16} = 8$ [S-13/21/Q5] [2]
Do not use a calculator and show all the steps of your working.

Q52 Without using a calculator, work out $\frac{6}{7} \div 1\frac{2}{3}$ [3]
Write down all the steps in your working. [S-13/22/Q11] [3]

(T) Q53 The time in Lisbon is the same as time in Funchal.
A plane left Lisbon at 0830 and arrived in Funchal at 1020.

It then left Funchal at 1255 and returned to Lisbon.

The return journey took 15 minutes more.

What time did the plane arrive in Lisbon. [S-13/23/Q3] [2]

Q54 Use a calculator to find, $\sqrt{5\frac{5}{24}}$ [S-13/23/Q4(a)] [1]

Q55 Write the following in order of size, smallest first. [2]
 $(1.5)^{2/3}$, $(\frac{2}{3})^{1.5}$, $(\frac{2}{3})^{-1.5}$, $(-\frac{2}{3})^{2/3}$ [S-13/23/Q5] [2]

Q56 Do not use a calculator in this question and show all the steps of your working. Give each answer as a fraction in its lowest terms.
work out,

(a) $\frac{3}{4} - \frac{1}{12}$ [2]

(b) $2\frac{1}{2} \times \frac{4}{25}$ [2]

[W-13/21/Q15]

Q57 (a) Convert 144 km/h into metres per seconds. [2]

(b) A train of length 120 m is travelling at 144 km/h.

It passes under a bridge of width 20 m.

Find the time taken for the whole train to pass under the bridge.

Give your answer in seconds.

[W-13/21/Q19]

[2]

Q58 Write in the following in order of size, smallest first.

19% $\frac{1}{5}$ $\sqrt{0.038}$ $\sin 11.4^\circ$ 0.719^5 [W-13/22/Q1] [2]

Q59 Use a calculator to work out the following:

$$3(-4 \times 6^2 - 5)$$

[W-13/22/Q2(a)] [1]

Q60. Pam wins the student of the year award in New Zealand.

She sends three photographs of the award ceremony by post to her relatives.

- one of size 13 cm by 23 cm to her uncle in Australia.
- one of size 15 cm by 23 cm to her sister in china.
- one of size 23 cm by 35 cm to her mother in the UK.

Maximum lengths	Australia	Rest of the world
13 cm by 23.5 cm	\$ 1.90	\$ 2.50
15.5 cm by 23.5 cm	\$ 2.40	\$ 2.90
23 cm by 32.5 cm	\$ 2.80	\$ 3.40
26 cm by 38.5 cm	\$ 3.60	\$ 5.20

The cost of postage is shown in the table above.

[W-13/22/Q13]

Use this information to calculate the total cost.

[3]

Q61. Christa had a music lesson every week for one year.

Each of the 52 lessons lasted for 45 minutes. Calculate the total time that Christa spent in music lessons. Give your time in hours.

[W-13/23/Q1]

[2]

62, write 22 metres per second in kilometres per hour. [W-13/23/Q5(b)] [2]

Vulgar and decimal fractions
and percentage:Exercise 1.3

- Q1 Write the recurring decimal $0.1\dot{7}$ as a fraction. [2]
Show all your working. [M-17/22/Q6]
- Q2 Write the recurring decimal $0.4\dot{4}$ as a fraction. [2]
[$0.4\dot{4} = 0.444\dots$] [M-16/22/Q6]
- Q3 Work out 85 cents as a percentage of \$2.03. [S-17/22/Q5] [1]
- Q4 Write your recurring decimal $0.6\dot{3}$ as a fraction in its lowest terms. You must show all your working. [S-17/23/Q14] [3]
- Q5 From a sample of 80 batteries, 3 are faulty. [1]
Work out the percentage of faulty batteries. [S-16/21/Q2]
- Q6 Write down the recurring decimal $0.3\dot{6}$ as a fraction. [3]
Give your answer in its simplest form. [S-16/22/Q12]
- Q7 Write the recurring decimal $0.3\dot{2}$ as a fraction. [S-16/23/Q8] [2]
- Q8 (a) Write \$0.70 as a fraction of \$5.60, giving your answer in its lowest terms. [1]
(b) Write the recurring decimal $0.1\dot{8}$ as a fraction in its lowest terms. [W-16/21/Q12] [2]
- Q9 Write down the recurring decimal $0.\dot{2}$ as a fraction. [W-16/23/Q13] [2]
- Q10 Write the recurring decimal $0.2\dot{5}$ as a fraction. [S-15/22/Q9] [2]
- Q11 Write the recurring decimal $0.1\dot{5}$ as a fraction. [W-15/21/Q10] [2]
- Q12 Write 0.72 as a fraction in its lowest terms. [W-15/23/Q4/0607/13]
- Q13 Work out 72 cents as a percentage of 83 cents. [W-13/21/Q1] [1]
- Q14 Calculate 17.5% of 44 kg. [W-13/21/Q4] [2]

Rules of Indices and Standard form:

Exercise - 1.4

- Q1 Write 2016 in standard form. [M-16/22/Q13(b)] [1]
- Q2 (a) $2^x = \frac{1}{16}$; Find the value of x . [1]
- (b) $3^t = 5\sqrt{3}$, Find the value of t . [1]
- Q3 (a) Write 0.0605 in standard form. [S-17/22/Q11] [1]
- (b) Calculate $0.1 \times 5.1 \times 10^4$, giving your answer in standard form. [1]
- Q4 Work out:
- (a) $125^{2/3}$ [1]
- (b) $(\frac{1}{3})^{-2}$ [S-17/22/Q14] [1]
- Q5 (a) Simplify. $(16x^{16})^{3/4}$ [2]
- (b) $2p^{3/2} = 54$
Find the value of p . [S-17/22/Q25] [2]
- Q6. Simplify: $(\frac{8}{a^{1/2}})^{1/3}$ [S-17/23/Q8] [2]
- Q7 Write 1.27×10^{-3} as an ordinary number. [S-16/21/Q3] [1]
- Q8 Simplify $(16p^{16})^{1/4}$ [S-16/21/Q12] [2]
- Q9 Write 0.0000574 in standard form. [S-16/22/Q1] [1]
- Q10 Simplify: $(\frac{1}{2}x^{2/3})^3$ [S-16/22/Q6] [2]
- Q11 (a) Write 5^{-3} as a fraction. [W-16/21/Q5] [1]
- (b) Write 0.00456 in standard form. [W-16/22/Q1] [1]
- Q12 Write (a) 14835 in nearest thousand (b) and hence in standard form. [W-16/22/Q1] [2]
- Q13 Write in standard form: (a) 2470000 [1]
- (b) 0.0079 [W-16/23/Q4] [1]
- Q14 Write 270000 in standard form. [S-15/21/Q3] [1]
- Q15 Write 53400000 in standard form. [S-15/22/Q1] [1]
- Q16 (a) Find the value of (i) $(\frac{1}{9})^{0.5}$ [1]
- (ii) $(-8)^{2/3}$ [1]
- (b) Use a calculator to find the decimal value of.
$$\frac{\sqrt{29 - 3 \times 32^{0.4}}}{3}$$
 [S-15/22/Q16] [1]

Rules of Indices and Standard form; Exercise 1.4

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- Q17 Work out $(8 \times 10^{-4}) \times (2 \times 10^{-3})$, [2]
giving your answer in standard form. [0607/W-15/22/Q1(b)]
- Q18 (a) Find the value of 6^0 . [1]
(b) Write 5^{-2} as a fraction. [0607/W-15/22/Q7] [1]
- Q19 Find the exact value of:
(a) 3^{-3} [1]
(b) $16^{3/4}$ [0607/W-15/23/Q13] [1]
- Q20 Write 1.7×10^{-4} as an ordinary number. [W-15/23/Q3] [1]
- Q21 Find the value of:
(a) $(\sqrt{5})^8$ [W-15/23/Q10] [1]
(b) $(\frac{1}{27})^{-2/3}$ [1]
- Q22 Write 569000 in standard form. [S-14/22/Q2(b)] [1]
- Q23 (a) Use your calculator to find the value of $7.5^{-0.4} \div \sqrt{57}$
Write down your full calculator display. [S-14/23/Q5] [1]
(b) Write your answer to part (a) in standard form. [1]
- Q24 Work out $2.5 \times 10^8 \times 2 \times 10^{-2}$.
Give your answer in standard form. [W-14/21/Q9(b)] [2]
- Q25 Work out $4 \times 10^{-5} \times 6 \times 10^{12}$
Give your answer in standard form. [W-14/23/Q3] [2]
- Q26 Calculate $(4.3 \times 10^8) + (2.5 \times 10^7)$.
Give your answer in standard form. [S-13/22/Q4] [2]
- Q27 Calculate, giving your answers in standard form,
(a) $2 \times (5.5 \times 10^4)$ [2]
(b) $(5.5 \times 10^4) - (5 \times 10^4)$ [S-13/23/Q9] [2]
- Q28 Write the answer to the following calculations in standard form,
(a) $600 \div 8000$ [2]
(b) $10^8 - 7 \times 10^6$ [W-13/23/Q12] [2]

(Lower bound and upper bound) and Accuracy Exercise 1.5 "correct to nearest ten"
"Significant fig" "correct to decimal places"

Q1 Without using calculator and by rounding each number correct to 1 significant figure, estimate the value of:

$$\frac{10.3 \times 19.5}{88.9 - 43.2}$$

[2]

You must show all working.

M-17/22/Q3

Q2 The length of a rectangle is 9.3 cm, correct to 1 decimal place. Its width is 7.7 cm, correct to one decimal place.

Write down the lower bound and the upper bound for the area of the rectangle.

M-17/22/Q7 [3]

Q3 A metal pole is 500 cm long, correct to the nearest centimetre. The pole is cut into rods each of length 5.8 cm, correct to nearest millimetre. Calculate the largest number of rods that the pole can be cut into.

M-16/22/Q2

[3]

Q4 Write 23.4571 correct to
(a) 4 significant figures.

[1]

(b) the nearest 10.

S-17/21/Q3

[1]

Q5 Write 0.07164 correct to 2 significant figures.

S-17/22/Q1

[1]

Q6 A rectangle has length 62 mm and width 47 mm, both correct to the nearest millimetre. The area of this rectangle is $A \text{ mm}^2$.

Complete the statement about the value of A.

$$\dots \leq A < \dots$$

S-17/22/Q18

[3]

Q7 Calculate $(2.1 - 0.078)^{17}$, giving your answer correct to 4 significant figure.

S-16/21/Q4

[2]

Q8 The sides of an equilateral triangle are 9.4 cm, correct to the nearest millimetres. Work out the upper bound of the perimeter of this triangle.

S-16/21/Q10

[2]

Q9 Write 3.5897 correct to 4 significant figures.

S-16/22/Q3

[1]

Q10 The base of a triangle is 9 cm correct to the nearest cm.

The area of this triangle is 40 cm^2 correct to the nearest 5 cm^2 .

S-16/22/Q13

Calculate the upper bound for the perpendicular height of this triangle.

[3]

Q11 Write 71496 correct to 2 significant figures.

S-16/23/Q2

[1]

"Significant figures" or "Lower and upper bound", "to decimal places", "correct to nearest ten"

Q12 (a) $V = IR$

In an experiment I and R are both measured correct to 1 decimal place, when $I = 4.0$ and $R = 2.7$, find the lower bound for V. [2]

(b) $S = \frac{D}{T}$

[S-16/23/Q17]

In an experiment D and T are both measured correct to 2 significant figures, when $D = 7.6$ and $T = 0.23$, find the upper bound for S. [2]

Q13 Write 0.0401907 correct to

(a) 3 significant figures, [1]

(b) 3 decimal places, [W-16/21/Q2] [1]

Q14(a) Write 14835 correct to the nearest thousand, [W-16/22/Q1(a)] [1]

Q15 The sides of a square are 8cm correct to the nearest centimetre, Calculate the upper bound for the area of the square, [W-16/22/Q6] [2]

Q16 The length of a car is 4.2m, correct to 1 decimal place.

Write down the upper bound and the lower bound of the length of this car. [2]

[W-16/23/Q8]

Q17 Write 23.4571 correct to,

(a) 4 significant figures, [1]

(b) The nearest 10, [S-17/21/Q3] [1]

Q18 Rice is sold in 75 gram packs and 120 gram packs.

The masses of both packs are given correct to the nearest gram.

Calculate the lower bound for the difference in mass between the two packs, [S-15/21/Q6] [2]

[S-15/21/Q6]

[2]

Q19 One year ago Ahmed's height was 114cm.

Today his height is 120cm,

[S-15/22/Q10]

Both measurements are correct to the nearest centimetre.

Work out the upper bound for the increase in Ahmed's height, [2]

Q20 An equilateral triangle has sides of length 6.2cm, correct to the nearest millimetre. Complete the statement about the perimeter, P cm, of the triangle, [S-15/23/Q4]

----- $\leq P <$ -----

[2]

Q21 By writing each number correct to 1 significant figure, estimate the value of $\frac{\sqrt{3.9 \times 29.3}}{8.9 - 2.7}$, show all your working, [W-15/21/Q6] [2]

Q22 A rectangle has length 5.8 cm, and width 2.4 cm, both correct to 1 decimal place. Calculate the lower bound and the upper bound of the perimeter of this rectangle. [W-15/22/Q18] [3]

Q23 Write 168.9 correct to 2 significant figures. [W-15/23/Q1] [1]

Q24 The volume of a cuboid is 878 cm³, correct to the nearest cubic centimetre. The length of the base of the cuboid is 7 cm, correct to the nearest centimetre. The width of the base of the cuboid is 6 cm, correct to the nearest centimetre. Calculate the lower bound for the height of the cuboid. [W-15/23/Q20] [3]

Q25
$$p = \frac{4.8 \times 1.98276}{16.83}$$

(a) In the spaces provided, write each number in this calculation correct to 1 significant figure.

[S-14/21/Q4]

-----X-----
----- [1]

(b) Use your answer to part (a) to estimate the value of p. [1]

Q25 Write 569000 correct to 2 significant figures. [S-14/22/Q22] [1]

Q26 The mass of 1 cm³ of copper is 8.5 grams, correct to 1 decimal place. Complete the statement about the total mass, T grams, of 12 cm³ of copper. [S-14/22/Q6] [2]

----- ≤ T < -----

Q27 A rectangle has length 127.3 cm and width 86.5 cm, both correct to 1 decimal place. Calculate the upper bound and the lower bound for the perimeter of the rectangle. [S-14/23/Q15] [3]

Q28 Use your calculator to find the value of 1.35⁷. Give your answer correct to 5 significant figures. [W-14/21/Q1] [2]

Q29 Write 15.0782 correct to

(a) one decimal place. [1]

(b) the nearest 10. [W-14/21/Q6] [1]

Q30 The length l metres, of a football pitch is 96 m, correct to the nearest metre. Complete the statement about the length of this football pitch.

----- ≤ l < ----- [W-14/22/Q6] [2]

Q31 (a) Calculate $\sqrt{5.7} - 1.03^2$

S-13/21/Q2

write down all the numbers displayed on your calculator. [1]

(b) Write your answer to part (a) correct to 3 decimal places. [1]

Q32 An equilateral triangle has sides of length 16.1 cm, correct to the nearest millimeter. Find the lower and upper bounds of the perimeter of the triangle.

S-13/21/Q9

[2]

Q33 (a) Use your calculator to work out $\sqrt{65} - 1.7^2$,

S-13/22/Q7

write down all the numbers displayed on your calculator. [1]

(b) Write your answer to part (a) correct to 2 significant figures [1]

Q34 Joe measures the side of a square correct to 1 decimal place.

He calculates the upper bound for the area of square is 37.8225 cm^2

Work out Joe's measurement for the side of the square.

S-13/22/Q8

Q35 Calculate $\frac{5.27 - 0.93}{4.89 - 4.07}$, Give your answer correct to 4 significant figures.

W-13/21/Q2

Q36 The length, p cm, of a car is 440 cm, correct to the nearest 10 cm.

Complete the statement about p . $----- \leq p < -----$

W-13/21/Q7

[2]

Q37 A circle has a radius of 8.5 cm correct to the nearest 0.1 cm.

The lower bound for the area of the circle is $p\pi \text{ cm}^2$.

The upper bound for the area of the circle is $q\pi \text{ cm}^2$.

Find the value of p and value of q .

W-13/22/Q12

[3]

Simple Interest and
Compound Interest

Exercise 1.6

and Exponential Growth, Money, Population, Increase (or) Percentage.

Q1. The population of the world grows exponentially at a rate of 1.1% per year.

Find the number of years it takes for the population from 7 billion to 7.31 billion.

Give your answer to the nearest whole number. [M-17/22/Q4] [2]

Q2. The population of Olton is decreasing at a rate of 3% per year. In 2013, the population was 50000.

Calculate the population after 4 years.

[M-15/22/Q12]

Give your answer correct to the nearest hundred. [3]

Q3. Marcel invests \$2500 for 3 years at a rate of 1.6% per year

simple interest. Jacques invests \$2000 for 3 years at a rate of $x\%$ per year compound interest. At the end of the 3 years Marcel and Jacques receive the same amount of interest. [5]

Calculate the value of x correct to 3 significant figures. [S-17/23/Q24]

Q4 Omar changes 2000 Saudi Arabian riyals (SAR) into euros (€).

(M) When the exchange rate is $\text{€}1 = 5.087 \text{ SAR}$. € ---- [2]

Work out how much Omar receives, giving your answer correct to the nearest euro.

[S-16/21/Q5]

Q5 It is estimated that the world's population is growing at a rate of 1.14% per year. On January 1st 2014 the population was 7.23 billion.

[S-16/22/Q19]

(a) Find the expected population on January 1st 2020. [2]

(b) Find the year when the population is expected to reach 10 billion. [2]

Q6 At the start of an experiment there are 20000 bacteria.

The number of bacteria increases at a rate of 30% per hour.

(a) Work out the number of bacteria after 4 hours. [S-16/23/Q19] [2]

(b) After how many whole hours, from the start of the experiment, will the number of bacteria be greater than one million? [2]

Q7 The price of a toy is 12 euros (€) in Germany and 14 Swiss francs in Switzerland.

(M) 1 Swiss franc = €0.905. Calculate the difference between two prices. [2]

Give your answer in euros.

[W-16/21/Q3]

Application of Percentage, Money (M)

Date _____
Page 2

- Q8 Indira buys a television in a sale for \$ 924.
This was a reduction of 12% on the original price. [3]
Calculate the original price of the television. [M-17/22/Q10]
- Q9 Ahmed paid \$ 34000 for a car.
His car decreased in value by 40% at the end of the first year.
The value at the end of the second year was 10% less than the
value at the end of the first year. [W-16/23/Q11]
Calculate the value of Ahmed's car after 2 years. [2]
- Q10 Georg invests \$ 5000 for 14 years at a rate of 2% per
year compound interest. Calculate the interest he receives.
Give your answer correct to nearest dollar. [S-15/21/Q16] [4]
- (M) Q11 James buys a drink for 2 euros (€).
Work out the cost of drinks in pounds (£) when £ = €1.252. [3]
Give your answer correct to 2 decimal places. [S-15/23/Q7]
- Q12 In a sale, the cost of a coat is reduced from \$ 85 to \$ 67.50. [3]
Calculate the percentage reduction in the cost of the coat. [S-15/23/Q10]
- Q13 Hazel invests \$ 1800 for 7 years at a rate of 1.5% per year, [4]
compound interest. Calculate how much interest she will receive
after 7 years. Give your answer correct to the nearest dollar. [W-15/21/Q16]
- (M) Q14 Carlos changed \$ 950 into euros (€) when the exchange rate
was €1 = \$1.368. Calculate how many euros Carlos received. [2]
- Q15 Robert buys a car for \$ 8000. [W-15/22/Q3]
At the end of each year the value of the car has decreased
by 10% of its value at the beginning of that year. Calculate
the value of car at the end of 7 years. [W-15/22/Q8] [2]
- Q16 Jasjeet and her brother collect stamps.
When Jasjeet gives her brother 1% of her stamps, she
has 2475 stamps left. [W-15/22/Q14]
Calculate how many stamps Jasjeet has originally. [3]
- (M) Q17 Carlo changed 800 euros (€) into dollars for his holiday when the
exchange rate was €1 = \$1.50. His holiday was then cancelled. He changed
all his dollars back into euros and received € 750. [3]
Find the new exchange rate. [S-14/21/Q6]

Application of Percentage/Money (M)

myCOMPANION

- Q18 At the beginning of July, Kim had a mass of 63 kg.
At the end of July, his mass was 61 kg. S-14/22/Q9
Calculate the percentage loss in Kim's mass. [3]
- Q19 Anita buys a computer for \$391 in a sale.
The sale price is 15% less than the original price. S-14/22/Q11
Calculate the original price of the computer. [3]
- (M) Q20 Chris changes \$1350 into euros (€) when €1 = \$1.313
Calculate how much he receives. S-14/23/Q3 [2]
- Q21 The population of Dubai at the end of 2012 was 2.1 million.
This was predicted to increase at a rate of 6% each year. W-14/21/Q7
Calculate the predicted population of Dubai at the end of 2015. [3]
- (M) Q22 On a ship the price of a gift is 24 euros (€) or \$30.
What is the difference in the price on a day when the exchange rate is €1 = \$1.2378? W-14/21/Q8
Give your answer in dollars, correct to the nearest cent. [3]
- (M) Q23 For a holiday, Alyssa changed 2800 Malaysian Ringgits (MYR) to US dollars (\$) when the exchange rate was 1 MYR = \$0.325.
At the end of her holiday she had \$210 left.
(a) How many dollars did she spend? W-14/22/Q7 [2]
(b) She changed the \$210 for 750 MYR.
What was the exchange rate in dollars for 1 MYR? [1]
- Q24 Alex invests \$200 for 2 years at a rate of 2% per year simple interest.
Chris invests \$200 for 2 years at a rate of 2% per year compound interest.
Calculate how much more interest Chris has than Alex. W-14/22/Q17 [4]
- (M) Q25 \$1 = 8.2 rand.
Change \$350 into rand. W-14/23/Q1 [2]
- Q26 Maryah borrows \$12000 to start a business. The loan is for 3 years at a rate of 5% per year compound interest. The loan has to be paid back at the end of the 3 years. W-14/Q23/Q10
Calculate the total amount to be paid back. [3]
- (M) Q27 Martina changed 200 Swiss Francs (CHF) to euros (€). The exchange rate was €1 = 1.14 CHF. Calculate how much Martina received. [3]
Give your answer correct to the nearest euro. S-13/21/Q13

Application of Percentage / Money (M) Exercise - 1.6

my companion

(M) Q28 George and his friend Jane buy copies of the same book on the internet. George pays \$ 16.95 and Jane pays £ 11.99 on a day when the exchange rate is \$ 1 = £ 0.626. [2]
Calculate in dollars, how much more Jane pays. [5-13/22/26]

Q29 Carol invests \$ 6250 at a rate of 2% per year compound interest. Calculate the total amount Carol has after 3 years. [5-13/22/213] [3]

(M) Q30 Sheila can pay her hotel bill in euros (€) or pounds (£). The bill was € 425 or £ 365, when the exchange rate was £ 1 = € 1.14. In which currency was the bill cheaper. Show all your working. [5-13/23/21] [2]

Q31 Emily invests \$ x at a rate of 3% per year simple interest. After 5 years she has \$ 20.10 interest. Find the value of x. [W-13/21/28] [3]

(M) Q32 The table shows how the dollar to euro conversion rate changed during one day:

Time	10 00	11 00	12 00	13 00	14 00	15 00	16 00
\$ 1	€ 1.3311	€ 1.3362	€ 1.3207	€ 1.3199	€ 1.3200	€ 1.3352	€ 1.3401

Khalil changed \$ 500 into euros (€) [W-13/22/210]
How many more euros did Khalil receive if he changed his money at the highest rate compared to the lowest rate? [3]

Q33 In 2012 the cost of a ticket to an art festival was \$ 30. This was 20% more than the ticket cost in 2011. Calculate the cost of the ticket in 2011. [W-13/23/26] [3]

Q1 Ahmed, Satish and Chand share \$1000 in the ratio 8:7:5.
Calculate the amount each receives. [M-15/22/Q9] [3]

Q2 Fritz drives a distance of 381 km in 2 hours and 18 minutes.
He then drives 75 km at a constant speed of 30 km/h. [4]
Calculate his average speed for the whole journey. [M-15/22/Q19]

Q3 Ralf and Susie share \$57 in the ratio 2:1
(a) Calculate the amount Ralf receives. [2]
(b) Ralf gives \$2 to Susie.
Calculate the new ratio Ralf's money : Susie's money
Give your answer in its simplest form. [W-16/22/Q12] [2]

Q4 Ahmed and Babar share 240g of sweets in the ratio 7:3
Calculate the amount Ahmed receives. [S-15/23/Q1] [2]

Q5 Pip and Ali share \$785 in the ratio Pip: Ali = 4:1
Work out Pip's share. [W-15/21/Q4] [2]

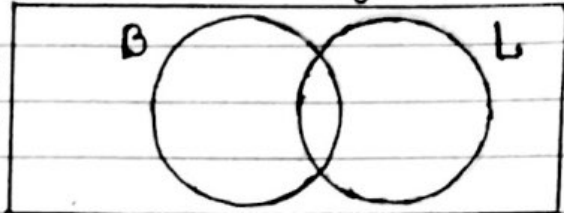
Q6 Pedro and Eva do their homework.
Pedro takes 84 minutes to do this homework.
The ratio Pedro's time : Eva's time = 7:6 [S-13/21/Q3]
Work out the number of minutes Eva takes to do her homework. [2]

Q1(a) A total of 20 trucks were tested at a checkpoint.

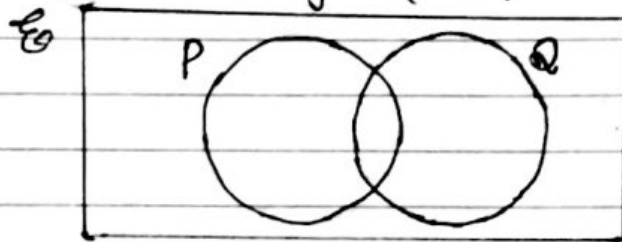
- 6 trucks failed the test for Brakes (B).
- 7 trucks failed the test for lights (L)
- 9 trucks passed the test for both brakes and lights.

M-17/22/Q17

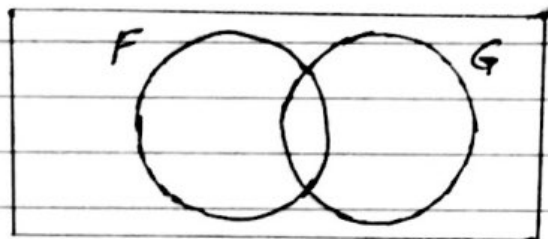
- (i) Complete the Venn diagram. --- [2]
 (ii) Find $n(B' \cap L')$. --- [1]



(b) In the Venn diagram below, shade the region $(P \cup Q) \cap Q'$ [1]

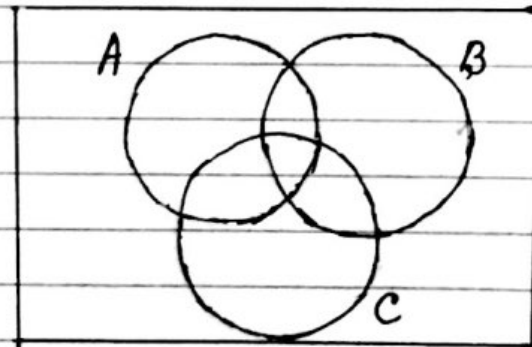


Q2(a) In this Venn diagram, shade the region $F \cup G'$.



- (b) $E = \{1, 2, 3, 4, 5, 6, 7, 8, 9\}$
 $A = \{x : x \text{ is an odd number}\}$
 $B = \{x : x \text{ is a square number}\}$
 $C = \{x : x \text{ is a multiple of } 3\}$

(i) Write down all the elements of E in the Venn diagram:



(ii) Another number is included in the set E .

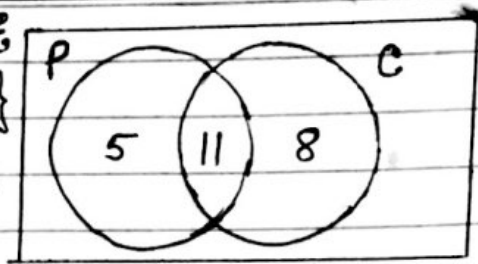
This number is in the region $A' \cap B \cap C$.

Write down a possible value of this number.

S-17/21/Q17

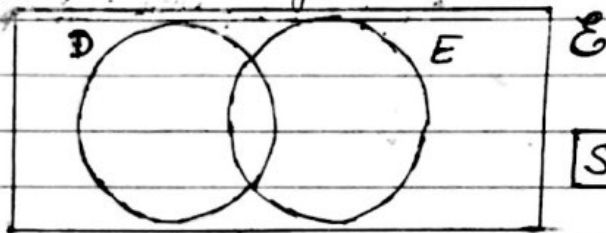
Sets and Venn Diagram: Exercise 1.8

Q3 $\mathcal{E} = \{ \text{Students in a class} \}$
 $P = \{ \text{Students who study physics} \}$
 $C = \{ \text{Students who study Chemistry} \}$



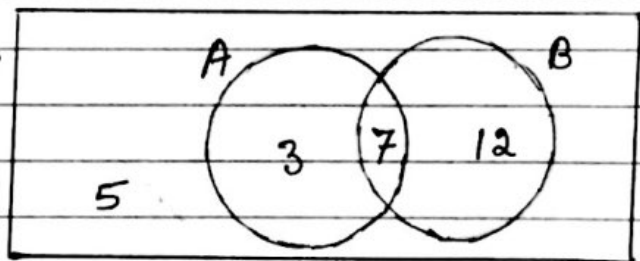
The Venn diagram shows number of students.

- (i) Find the number of students who study Physics or Chemistry. [1]
- (ii) Find $n(P \cap C')$ [1]
- (b) On the Venn diagram, shade the region $D \cup E'$. [1]



S-17/22/Q23

Q4. The Venn diagram shows the number of elements in each region.



- (a) Find $n(A \cap B')$ --- [1]
- (d) On the Venn diagram, shade the region $(A \cup B)'$

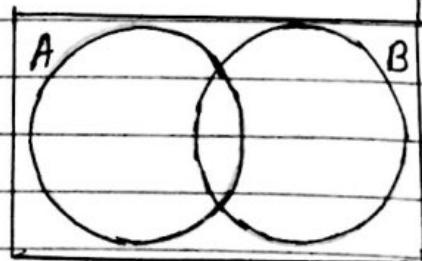
S-16/21/Q22(a),(d) [1]

Q5. $\mathcal{E} = \{ x : 2 \leq x \leq 16, x \text{ is an integer} \}$

(a) $M = \{ \text{even numbers} \}$
 $P = \{ \text{prime numbers} \}$

S-16/23/Q14

- (i) Find $n(M)$ [1]
- (ii) Write down set $(P \cup M)'$ [1]
- (b) On the Venn diagram, shade $A \cap B'$. [1]

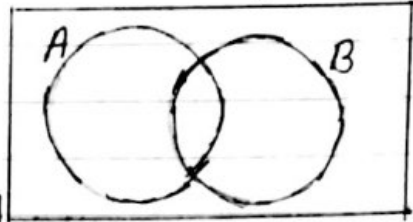


Sets and Venn Diagram: Exercise 1.8

Q6 $n(E) = 10, n(A) = 7, n(B) = 6,$

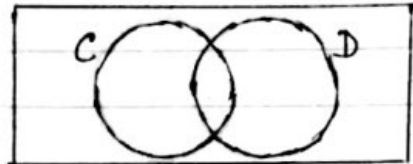
(a) and $n(A \cup B)' = 1$

(i) Complete the Venn diagram by writing the number of elements in each subset. [2]



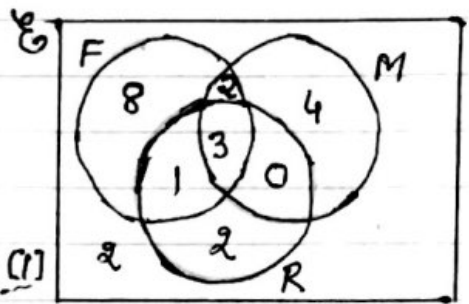
(b) On the Venn diagram, shade the region $C' \cap D'$. [1]

W-16/21/Q22



Q7 The Venn diagram shows the number of people who like films (F), music (M) and reading (R).

(a) Find (i) $n(M)$ [1]
(ii) $n(R \cup M)$ [1]



(c) on the Venn diagram, shade $M' \cap (F \cup R)$. [1]

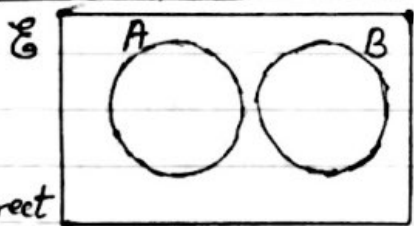
W-16/22/Q15

Q8 (a) $E = \{7, 9.3, \pi, \frac{5}{9}, 2\sqrt{8}\}$

$A = \{\text{integer}\}$

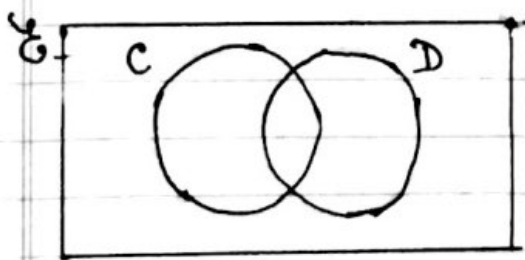
$B = \{\text{irrational number}\}$

Write all the element of E in their correct place on the Venn diagram.



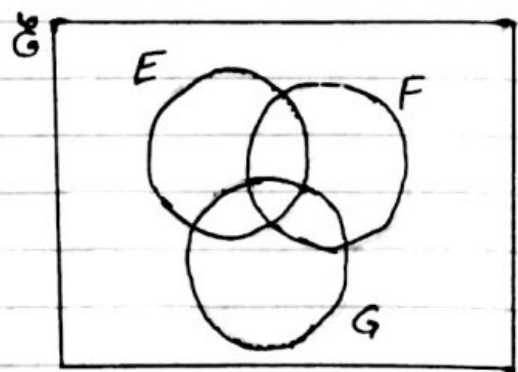
[2]

(b) Shade the region in each of the Venn diagrams below



$C' \cup D$

W-16/23/Q20



$E \cap F' \cap G$

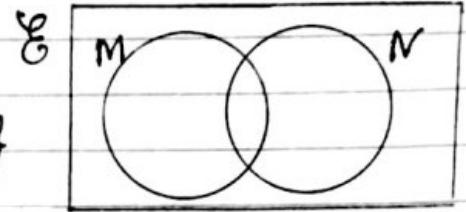
[2]

Q9(a) You may use this Venn diagram to help you answer part (a)

$E = \{x : 1 \leq x \leq 12, x \text{ is an integer}\}$

$M = \{\text{odd numbers}\}$

$N = \{\text{Multiple of 3}\}$



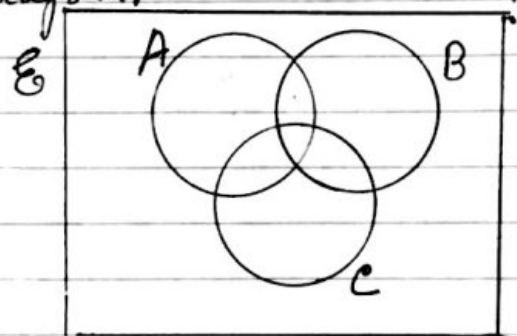
(i) Find $n(N)$ [1]

(ii) Write down the set $M \cap N$ [1]

(iii) Write down a set P where $P \subset M$. [1]

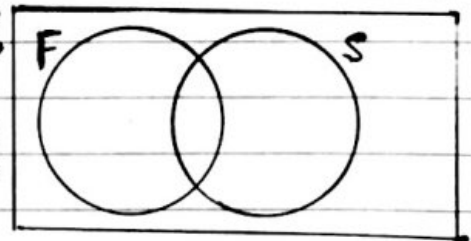
(b) Shade $(A \cup C) \cap B'$ in the Venn diagram. [1]

S-15/22/Q20



Q10(a) In this part, you may use this Venn diagram to help you answer the questions.

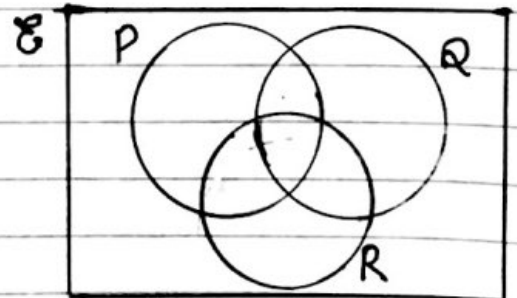
In a class of 30 students, 25 study French (F), 18 study Spanish (S). One student does not study French or Spanish.



(i) Find the number of students who study French and Spanish. [2]

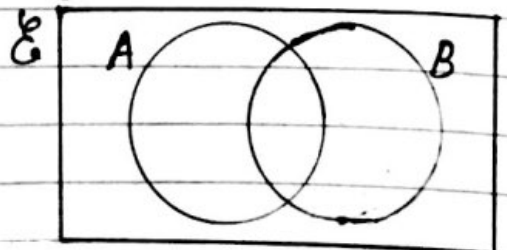
(b) On this diagram, shade the region, $R \cap (P \cup Q)'$ [1]

S-15/23/Q16

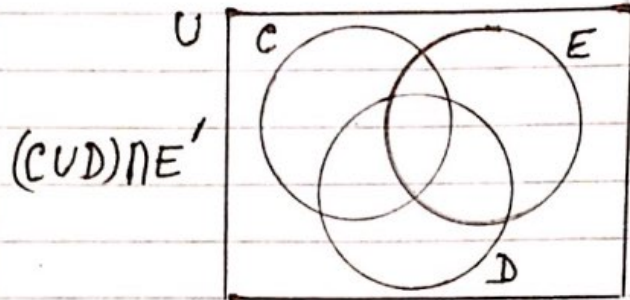
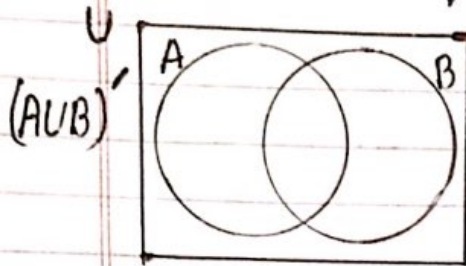


Q11 In the Venn diagram shade the region $A \cup B'$. [1]

W-15/21/Q2



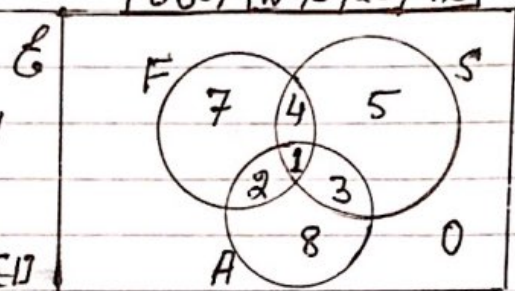
Q12 On each Venn diagram, shade the region indicated:



[2]

0607/W-15/23/Q15

Q13. The Venn diagram shows the number of students who study French (F), Spanish (S) and Arabic (A).



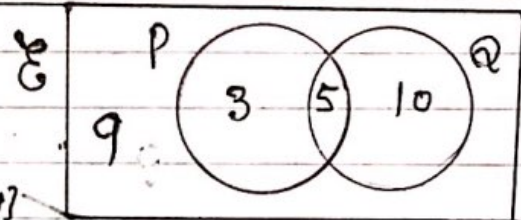
(a) Find $n(A \cup (F \cap S))$ - - - - [1]

(b) On the Venn diagram, shade the region, $F' \cap S$.

W-15/22/Q6

[1]

Q14 The Venn diagram shows the number of elements in each set.



(a) Find $n(P' \cap Q)$ - - - - [1]

(b) Complete the statement $n(\dots) = 17$ - - - - [1]

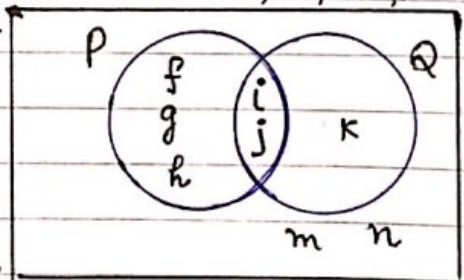
W-15/23/Q12

Q15 (a) Use information in the Venn diagram, to complete the following:

(i) $P \cap Q = \{ \dots \}$ - - - - [1]

(ii) $P' \cup Q = \{ \dots \}$ - - - - [1]

(iii) $n(P \cup Q)' = \dots$ - - - - [1]



(c) On the Venn diagram shade the region $P' \cap Q$

[1]

(d) Use a set notation symbol to complete the statement:

$\{f, g, h\} \dots P$

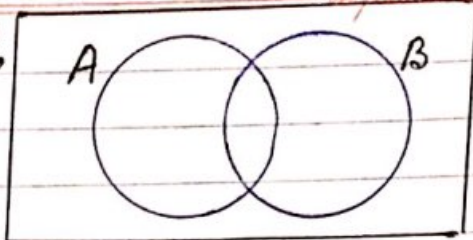
[1]

S-14/22/Q22

Q16. $\mathcal{E} = \{x : 1 \leq x \leq 10, x \text{ is an integer}\}$

$A = \{\text{square numbers}\}$

$B = \{1, 2, 3, 4, 5, 6\}$



(a) Write all the elements of \mathcal{E} in their correct place in the Venn diagram.

[2]

(b) List the elements of $(A \cup B)'$

[1]

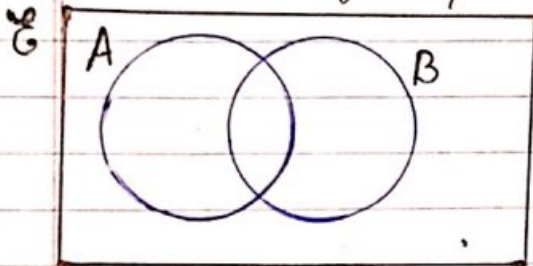
(c) Find $n(A \cap B)$

S-14/23/Q17

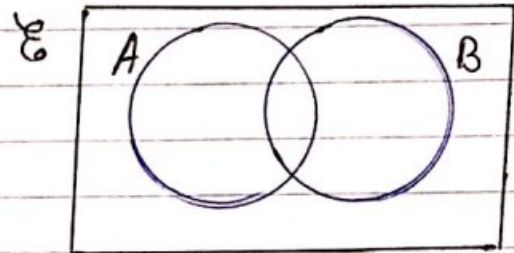
[1]

Q17 shade the regions required in each Venn diagram.

[2]



$(A \cup B)'$



$A \cap B$

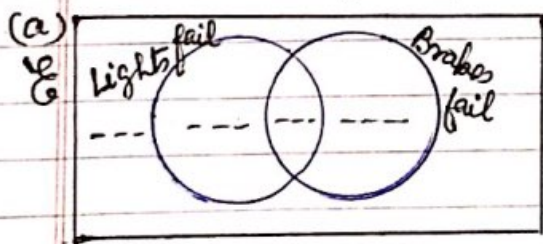
W-14/22/Q4

Q18 The lights and brakes of 30 bicycles are tested. The table shows the results.

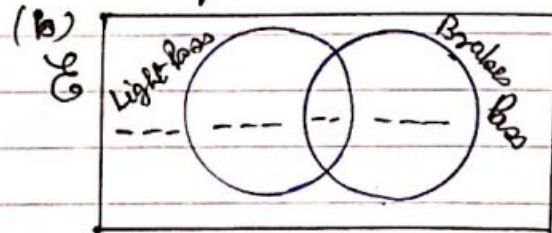
The lights and brakes both failed on one bicycle only.

$\mathcal{E} = \{30 \text{ bicycles}\}$, complete the Venn diagrams.

	Lights	Brakes
Fail Test	3	9
Pass Test	27	21



[2]

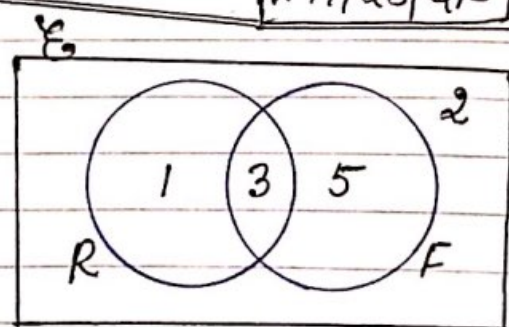


[2]

W-14/23/Q15

Q19 11 students are asked if they like rugby (R) and if they like football (F). The Venn diagram shows the results.

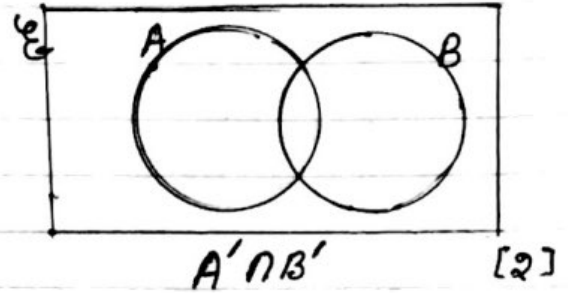
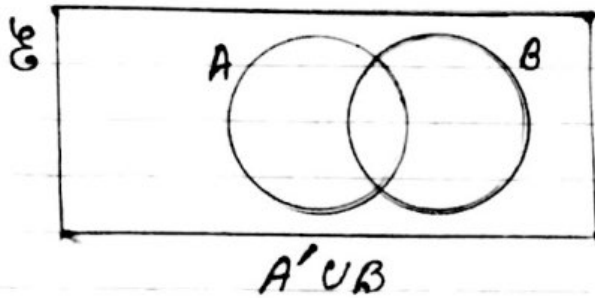
(b) On the Venn diagram shade the region $R' \cap F'$



[1]

S-13/21/Q12(b)

Q20 Shade the required region on each Venn diagram. [5-13/22/Q1]

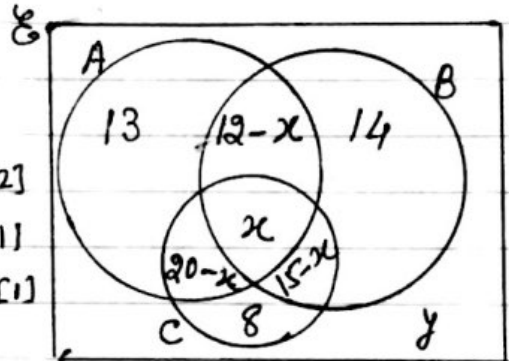


Q21 The Venn diagram shows the number of elements in sets A, B and C.

(a) $n(A \cup B \cup C) = 74$, Find x . --- [2]

(b) $n(E) = 100$, find y --- [1]

(c) Find the value of $n((A \cup B)' \cap C)$. --- [1]



[5-13/23/Q15]

Exercise-1.1

- Q1. $2^5 \times 3^2 \times 7$
- Q2. 96
- Q3. 0.394
- Q4. 120
- Q5. 144
- Q6 (a) 9 and 16 (b) 11
- Q7. 17
- Q8. 14
- Q9. 0.4^2 0.6^3 0.22 $\sqrt{0.09}$
- Q10. 2.9
- Q11. 2 cm
- Q12 (a) $2 \times 3 \times 5$ (b) 90
- Q13. 18
- Q14. 30
- Q15 (a) 12, 15 (b) 11, 13
- Q16. 3 3.14 π 3.142 $2\frac{2}{7}$
- Q17 (a) $2 \times 3 \times 3 \times 5$ (b) 630
- Q18. 0.34 0.7^3 0.6^2 $\sqrt{0.6}$
- Q19 (a) 77 (b) 18 or 19

Exercise-1.2

- Q1. $3\frac{1}{3} \div 2\frac{1}{2} = \frac{10}{3} \div \frac{5}{2} = \frac{10}{3} \times \frac{2}{5} = \frac{4}{3}$
 $= 1\frac{1}{3} \checkmark$
- Q2. $1\frac{7}{12} + \frac{13}{20} = \frac{19}{12} + \frac{13}{20} = \frac{95}{60} + \frac{39}{60} = \frac{134}{60}$
 $= \frac{67}{30} = 2\frac{7}{30} \checkmark$
- Q3. $3\frac{1}{3}$
- Q4. 2
- Q5. $2\frac{8}{21}$
- Q6. $\frac{1}{3}$
- Q7. $\frac{5}{6}$

- Q8. 8h 52m
- Q9. $\frac{18}{55}$
- Q10. 1.38 s
- Q11. 5.89
- Q12. $1\frac{1}{8}$
- Q13. $\frac{1}{10}$
- Q14. -7°C
- Q15. $\frac{5}{12}$
- Q16. $1\frac{7}{24}$
- Q17. $2\frac{3}{30}$
- Q18 (a) Chicago (b) -3°C
- Q19. $3\frac{3}{8}$
- Q20. 9.5°C
- Q21. 7.37
- Q22. $4\frac{1}{5}$
- Q23. 72 s
- Q24. 9h 30m
- Q25. $\frac{3}{10}$
- Q26. $3\frac{3}{8}$
- Q27. 17°C
- Q28. 19 s
- Q29. 20
- Q30. $5 - (2+3) \times 2 = -5$
- Q31. 17°C
- Q32. \$54
- Q33. $\frac{4}{3}$
- Q34. 0.101
- Q35. $\frac{7}{12}$
- Q36. 1.37
- Q37. 0.5^3 0.5^2 0.5 $\sqrt{0.5}$
- Q38 (a) 119h (b) 100 Pm.
- Q39. 1.49

Answers

Exercise 1.2

- Q40 $2\frac{1}{2}\%$, 0.2 , $\frac{43}{201}$, $\sqrt{0.1}$
- Q41 $\frac{1}{12}$
- Q42 -16°C
- Q43 $\frac{17}{36}$
- Q44 $\frac{5}{12}$
- Q45 280
- Q46 $6+5 \times (10-8) = 16$
- Q47 20
- Q48 $\frac{4}{3}$ or $1\frac{1}{3}$
- Q49 48 km/h
- Q50 11°C or -11°C
- Q51 $\frac{3}{2} \times \frac{16}{3} = 8$
- Q52 $18\frac{1}{35}$
- Q53 1500 or 3 PM
- Q54 2.28
- Q55 $(\frac{2}{3})^{1.5}$ $(-\frac{2}{3})^{2/3}$ $(1.5)^{2/3}$ $(\frac{2}{3})^{-1.5}$
- Q56 (a) $\frac{2}{3}$ (b) $\frac{2}{5}$
- Q57 (a) 40 m/s (b) 3.58
- Q58 19% , 0.719^5 , $\sqrt{0.038}$, $\sin 11.4^\circ$, $\frac{1}{5}$
- Q59 (a) -447
- Q60 $\$10$
- Q61 39 h
- Q62 79.2 km/h

Exercise 1.3

- Q1 $\frac{8}{45}$
- Q2 $\frac{4}{9}$
- Q3 41.9%
- Q4 $\frac{7}{11}$
- Q5 3.75%
- Q6 $\frac{11}{30}$

Exercise 1.3

- Q7 $\frac{29}{90}$
- Q8 (a) $\frac{1}{8}$ (b) $\frac{2}{11}$
- Q9 $\frac{2}{9}$
- Q10 $\frac{23}{90}$
- Q11 $\frac{14}{90}$
- Q12 $\frac{18}{25}$
- Q13 86.7%
- Q14 7.7 kg

Exercise - 1.4

- Q1 2.016×10^3
- Q2 (a) -4 (b) $\frac{1}{5}$
- Q3 (a) 6.05×10^{-2} (b) 5.1×10^3
- Q4 (a) 25 (b) 9
- Q5 (a) 8×10^2 (b) 9
- Q6 $\frac{2}{24}$ or 2×10^{-4}
- Q7 0.00127
- Q8 2 p4
- Q9 5.74×10^{-5}
- Q10 $\frac{1}{8} x^2$ or $0.125 x^2$
- Q11 (a) $\frac{1}{125}$ (b) 4.56×10^{-3}
- Q12 (a) 15000 (b) 1.5×10^4
- Q13 (a) 2.47×10^6 (b) 7.9×10^{-3}
- Q14 2.7×10^5
- Q15 5.34×10^7
- Q16 (a) (i) $\frac{1}{2}$ or $-\frac{1}{2}$ (ii) 4 (b) 1.37
- Q17 1.6×10^{-6}
- Q18 (a) 1 (b) $\frac{1}{25}$
- Q19 (a) $\frac{1}{27}$ (b) 8
- Q20 0.00017
- Q21 (a) 625 (b) 9

Exercise 1.4

- Q22 5.69×10^5
 Q23 (a) 0.059161 (b) 5.9161×10^{-2}
 Q24 5×10^6
 Q25 2.4×10^8
 Q26 4.55×10^8
 Q27 (a) 1.1×10^5 (b) 5×10^3
 Q28 (a) 7.5×10^{-2} (b) 9.3×10^7

Exercise 1.5

- Q1 $\frac{10 \times 20}{90 - 40} = \frac{200}{50} = 4\checkmark$
 Q2 70.7625 and 72.4625
 Q3 87
 Q4 (a) 23.46 (b) 20
 Q5 0.072
 Q6 2859.75 ; 2968.75
 Q7 157900
 Q8 28.35
 Q9 3.590
 Q10 10
 Q11 71000
 Q12 (a) 10.4675 (b) 34
 Q13 (a) 0.0402 (b) 0.040
 Q14 15000
 Q15 72.25
 Q16 4.25 , 4.15
 Q17 23.46
 Q18 44
 Q19 7
 Q20 18.45 , 18.75
 Q21 $\frac{\sqrt{4} \times 30}{9 - 3} = 10\checkmark$

- Q22 16.2 ; 16.6
 Q23 170
 Q24 18
 Q25 (a) $\frac{5 \times 2}{20}$ (b) 0.5
 Q25' 570000
 Q26 101.4 ; 102.6
 Q27 427.8 ; 427.4
 Q28 8.1722
 Q29 (a) 15.1 (b) 20
 Q30 95.5 ; 96.5
 Q31 (a) $1.32656\dots$ (b) 1.327
 Q32 48.15 , 48.45
 Q33 (a) $5.17225\dots$ (b) 5.2
 Q34 6.1
 Q35 5.293
 Q36 435 ; 445
 Q37 $p = 71.4025$; $q = 73.1025$

Exercise - 1.6

- Q1 4
 Q2 44300
 Q3 1.96
 Q4 393
 Q5 (a) 7.74 (b) 2042
 Q6 (a) 57122 (b) 15
 Q7 0.67
 Q8 1050
 Q9 18360
 Q10 1597
 Q11 1.60
 Q12 20.6
 Q13 198

Exercise-1.6

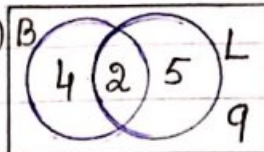
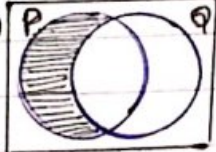
Answers

Exercise-1.8

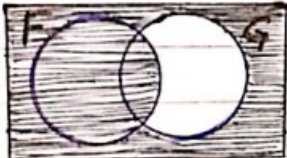
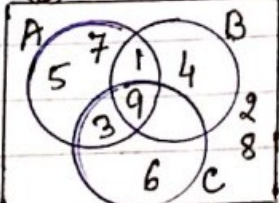
- Q14. 694
- Q15. 3826
- Q16. 2500
- Q17. 1.60
- Q18. 3.17
- Q19. 460
- Q20. 1030
- Q21. 2.50
- Q22. 0.29
- Q23 (a) 700 (b) 0.28
- Q24. 0.08
- Q25. 2870
- Q26. 13891.50
- Q27. 175
- Q28. 2.20
- Q29. 6632.55
- Q30. £ or pounds
- Q31. 134
- Q32. 10.10
- Q33. 25.00

Exercise-1.7

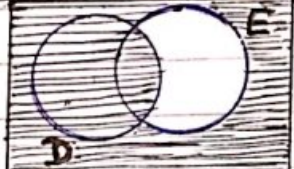
- Q1. 400, 350, 250
- Q2. 95
- Q3. (a) 38 (b) 12:7
- Q4. 168
- Q5. 628
- Q6. 72

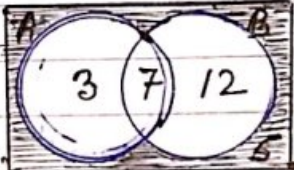
Q1(a) (i)  (b) 

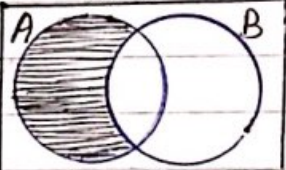
(ii) 9

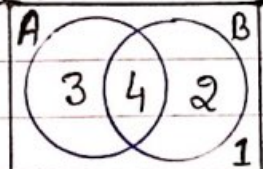
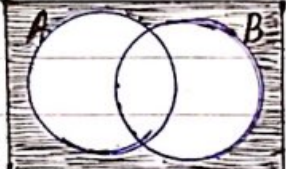
Q2(a)  (b) 

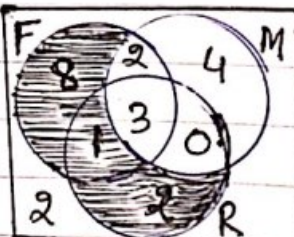
(ii) Any even number that is also a multiple 3.

Q3(a) (i) 24 (ii) 5 (b) 

Q4 (a) 3 (d) 
(A ∪ B)'

Q5 (a) (i) 8 (ii) {9, 15} (b) 

Q6(a) (a)  (b) 

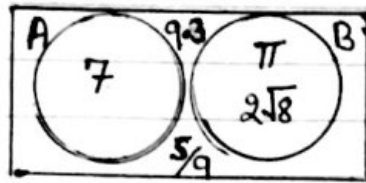
Q7 (a) (i) 9 (ii) 12 (b) 
(b) $M' \cap (F \cup R)$

Answers

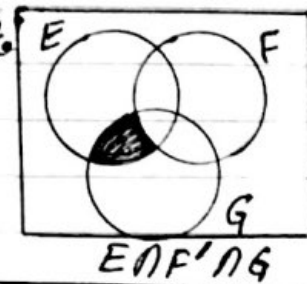
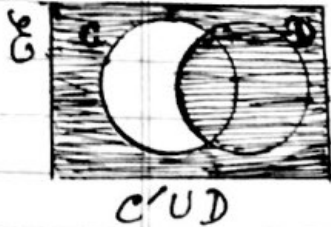
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Exercise 1.8

Q8 (a)

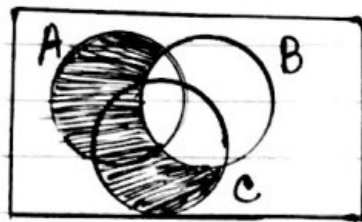


(b)



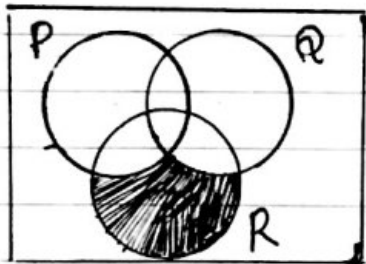
Q9 (a) (i) 4 (ii) {3, 9}
 (iii) fewer than 6 numbers from {1, 3, 5, 7, 9, 11} or ϕ

(b) $(A \cup C) \cap B'$



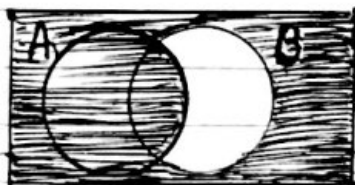
Q10 (a) (i) 14
 (b)

$R \cap (P \cup Q)'$

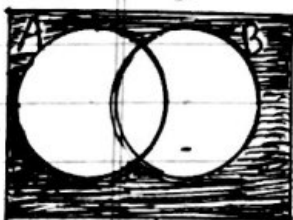


Q11

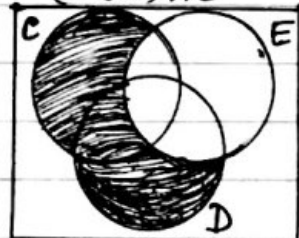
$A \cup B'$



Q12 $(A \cup B)'$

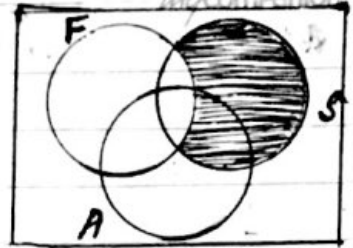


$(C \cup D) \cap E'$



Q13 (a) 18 (b)

(b) $F' \cap S$



Q14 (a) 10

(b) $P \cup Q'$

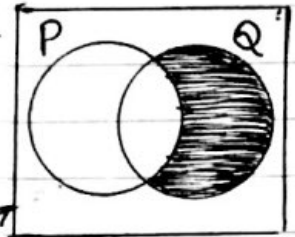
Q15 (i) {i, j}

(ii) {l, j, k, m, n}

(iii) 2

(c) $P' \cap Q'$

(d) C or \subseteq

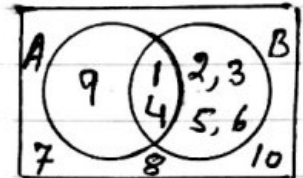


Q16

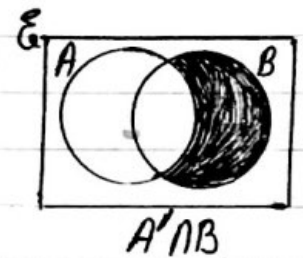
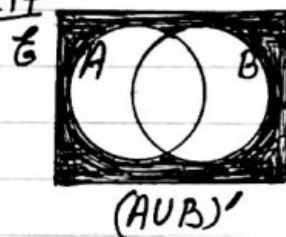
(a)

(b) 7, 8, 10

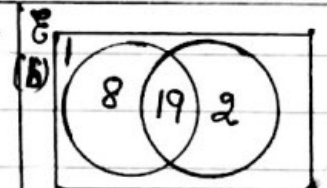
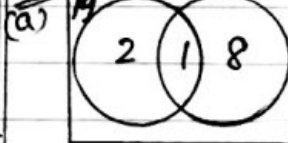
(c) 1



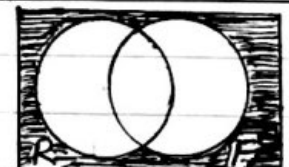
Q17



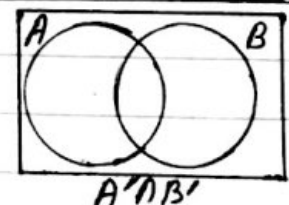
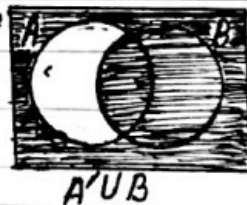
Q18



Q19 (b) $R' \cap F'$



Q20



Q21 (a) 4
 (b) 26

(c) 8.