1. [3 marks] Convert $42BE_{16}$ to decimal.

$$A_{16} = 10$$
$$B_{16} = 11$$
$$C_{16} = 12$$
$$D_{16} = 13$$
$$E_{16} = 14$$
$$F_{16} = 15$$

$42BE_{16} =$ $4 \times 16^3 + 2 \times 16^2 + 11 \times 16^1 + 14 \times 16^0$

16^3 place 16^0 place

$$= 4 \times 4096 + 2 \times 256 + 11 \times 16 + 14 \times 1$$
$$= 17086$$

2. [3 marks] Convert 0.324_5 to decimal. Do not round your answer.

5^{-1} place 5^{-3} place

$0.324_5 =$ $3 \times 5^{-1} + 2 \times 5^{-2} + 4 \times 5^{-3}$

$$= 3 \times \frac{1}{5} + 2 \times \frac{1}{25} + 4 \times \frac{1}{125}$$

$$= 0.712$$

3. [4 marks] Convert 426.904 to base 5.

	Q	R
$426 \div 5$	85	1 ↑
$85 \div 5$	17	0
$17 \div 5$	3	2
$3 \div 5$	0	3

	Integer	Non-Integer
0.904×5	4	0.52
0.52×5	2	0.6
0.6×5	3 ↓	0

$$426.904 = 3201.423_5$$

4. [4 marks] Convert 0.4625 to octal.

	Integer	Non-Integer
0.4625×8	3	0.7
0.7×8	5	0.6
0.6×8	4	0.8
0.8×8	6	0.4
0.4×8	3	0.2
0.2×8	1	0.6
0.6×8	4	
	6	
	3	
	1 ↓	

$$0.4625 = 0.35\overline{4631}_8$$

5. [3 marks] Is the second sentence the negation of the first sentence?
State YES or NO.

a) Rachel got fewer than four answers correct. Rachel got more than four
answers correct.

$0, 1, 2, 3$ $5, 6, 7, ...$

No

b) All of the students are late. None of the students are late.

No

c) There are no bugs in this code. There is at least one bug in this code.

YES

6. [2 marks] State YES, NO or MAYBE.

a) Krista likes classical or pop music. Does she like classical music?

MAYBE

b) Athena does not like pop music. Does she like pop or jazz music?

MAYBE

7. [3 marks] Let p represent "This sauce contains pepper."
Let s represent "This sauce contains salt."
Rewrite the following using logical symbols.

a) It is not true that this sauce contains salt and pepper.
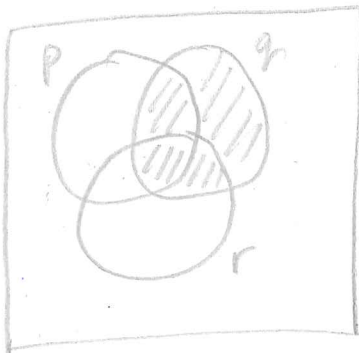
$\sim (s \wedge p)$

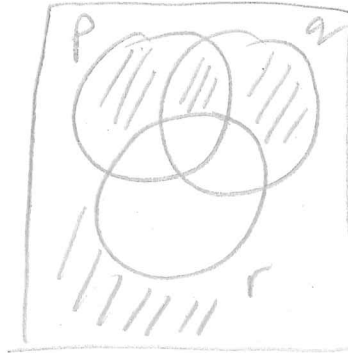b) This sauce contains pepper but not salt.

$p \wedge \sim s$ — and

c) This sauce contains salt or it does not contain pepper.
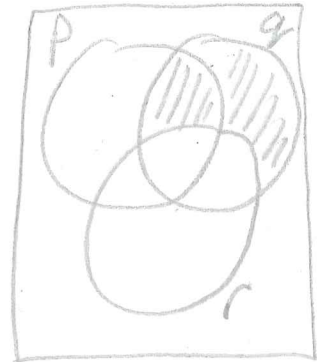
$s \vee \sim p$

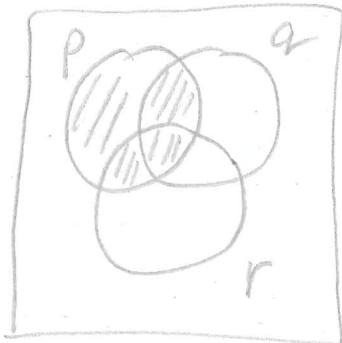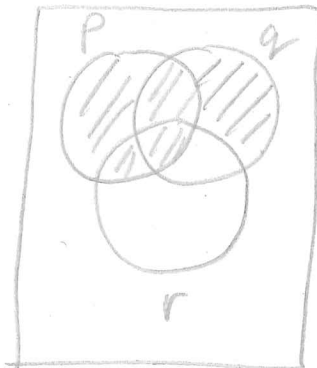8. [3 marks] Draw a Venn diagram for $p \lor (q \land \sim r)$.

q

~r

q∧~r

p

pv(q∧~r)