

MOCK EXAM REVIEW 2014



NUMBER THEORY

INTEGERS, POWERS, AND ROOTS

ALGEBRA

PERCENT

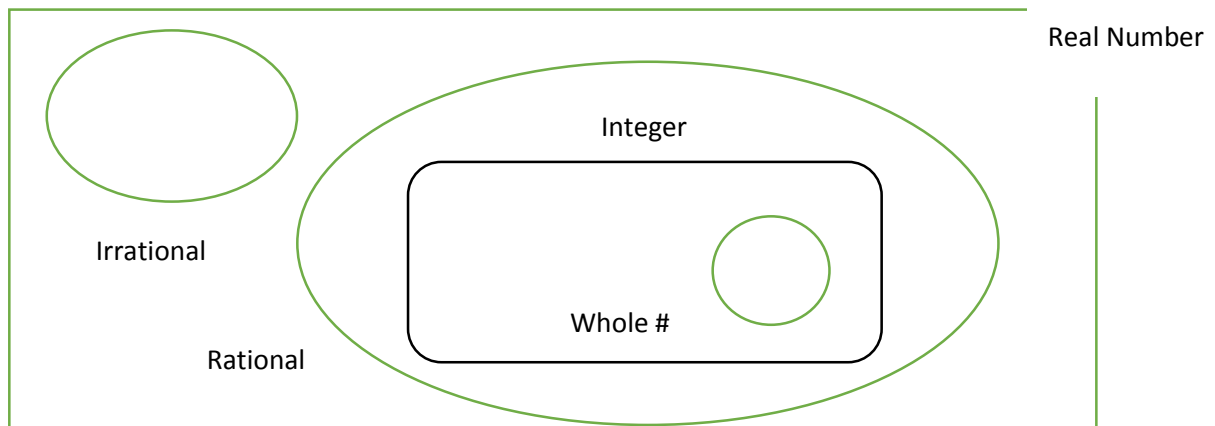
Work through all the questions below and check answers at the end of the worksheet. If you have any question with this section, please ask during the next class time or come to consultation.

NUMBER THEORY

Complete the following on a sheet of paper. Show all work!

1. Where would you place the following numbers:

a. 3 , $\frac{2}{3}$, 0 , $\sqrt{7}$, 2.5 , -2 , $0.\overline{33}$



ORDER OF OPERATIONS:

Classify the following numbers:

1. 4 , _____

2. 3.2 , _____

3. $\frac{1}{3}$, _____

4. $\sqrt{5}$, _____

5. $0.\overline{66}$, _____

Simplify the following:

6. $\sqrt[3]{225}$ _____

7. 8^2 _____

8. $\sqrt{25}$ _____

9. 3^3 _____

10. $\sqrt[3]{729}$ _____

11. $\left(\frac{2}{3}\right)^2$ _____

12. $\sqrt{196}$ _____

,

1. $3\frac{1}{2} \div \left(2\frac{1}{8} - \frac{3}{4}\right)$

2. $3\frac{1}{4} + 5\frac{1}{2} \div \frac{3}{8}$

3. $6 \times 4 - 12 \div 3 - 8$

4. $20 - (3 \times 2^3 - 5)$

5. $(5 + 2)^2 - 9 \times 3 + 2^3$

6. $(12 \div 3 + 4) - (4^2 - 6 \times 2)$

7. $(7 - \sqrt{9}) \times (4^2 - 3 + 1)$

8. $\frac{2^4 + (16 - 3 \times 4)}{(6 + 3^2) \div (7 - 4)}$

FRACTIONS

1 Simplify:

a $\frac{-24}{8}$

b $\frac{-3}{-9}$

c $\frac{4-7}{11+2^2}$

d $\frac{6-3 \div 3}{2+10 \div 2}$

2 Plot the fractions $-\frac{1}{3}$, $\frac{2}{3}$, $1\frac{1}{3}$ and $2\frac{2}{3}$ on a number line.

3 Write in ascending order: $-\frac{3}{4}$, $1\frac{1}{4}$, $\frac{2}{3}$, $-1\frac{1}{2}$ and $\frac{4}{5}$.

4 Find:

a $\frac{3}{7} + \frac{5}{14}$

b $\frac{2}{3} - \frac{4}{5}$

c $-1\frac{1}{4} + -\frac{2}{3}$

d $\frac{1}{4} - \frac{3}{5} - \frac{1}{2}$

5 What number is $\frac{3}{4}$ more than $\frac{2}{3}$?

6 Find:

a $\frac{2}{3} \times 1\frac{1}{2}$

b $-\frac{2}{3} \div \frac{1}{2}$

c $-3 \times (-\frac{2}{3})^2$

d $\frac{4}{7}$ of \$630

7 Find the number which is midway between $\frac{3}{4}$ and -1 .

8 Simplify:

a $\frac{2 + \frac{1}{3}}{1 + \frac{2}{3}}$

b $\frac{\frac{3}{4} - \frac{2}{5}}{1 + \frac{3}{5}}$

PERCENT

1.

Find:

a 20% of \$36

c 5% of 18 m (in cm)

e 22% of 1 tonne (in kg)

b 36% of €4200

d 125% of £600

f 72% of 3 hours (in min)



2.

Perform the following operations using two steps:

a increase €8000 by 15%

c increase \$15 500 by 12%

e increase 78 kg by 3%

b decrease 96 kg by 5%

d decrease \$25 000 by 30%

f decrease £85 by 22%.

3.

Describe the change if:

- a 32 cm is stretched to 40 cm
- b the cost drops from £136 to £119
- c 42 kg is decreased to 39 kg
- d 56 m is increased to 62 m
- e I now charge \$45 per hour whereas before it was \$38 per hour
- f my old truck carried 15 tonnes, but the new one carries 18 tonnes.

4.

Find the percentage increase or decrease for the following changes:

- a 48 cm to 60 cm
- b €160 to €96
- c 2.5 tonnes to 4 tonnes
- d 1 hour to 24 minutes
- e 1.5 kg to 800 g
- f 2.4 litres to 4.2 litres

5.

For each of the following transactions, find:

- i the profit or loss
 - ii the percentage profit or loss.
- a I bought a CD set for \$50 and then sold it for \$30.
 - b Jon bought a car for £5000 and then sold it for £6250.
 - c Jodie bought a bicycle for €200 and then sold it for €315.
 - d Hilda sold for \$816 a refrigerator which cost her \$680.
 - e Frank sold for €422.50 a kitchen sink which cost him €325.

SIMPLE INTEREST

1 Find the simple interest charged when:

- a \$5000 is borrowed for 1 year at 12% per annum simple interest
- b £2500 is borrowed for 2 years at 8% p.a. simple interest
- c €40 000 is borrowed for 6 months at 11% p.a. simple interest
- d \$250 000 is borrowed for 9 months at 20% p.a. simple interest.

2 Find the total amount needed to repay a loan of:

- a €2400 for 3 years at 10% p.a. simple interest
- b \$8000 for 18 months at 12% p.a. simple interest
- c £7500 for $2\frac{1}{2}$ years at 8% p.a. simple interest
- d \$23 000 for 4 months at 15% p.a. simple interest

ALGEBRA

1.

- | | | |
|----------------------------|----------------------------|-----------------------------|
| a $3(z + 2)$ | b $3(3z - 2)$ | c $10(2z - 3y)$ |
| d $7(x + 3z + 1)$ | e $6(2 - 3a - 5b)$ | f $4(5z - 2x + 3y)$ |
| g $2a(3x - 4y + 7)$ | h $x(5 - 2x + 3y)$ | i $2p(3 + x - 2q)$ |
| j $4(2x - 5y - 2)$ | k $6(m + 2n + 8)$ | l $7x(x + 3y + 4)$ |
| m $5x(x + 3y + 7z)$ | n $8x(a - 3b + c)$ | o $10x(x + 5) + 1$ |
| p $9y(x - z + p)$ | q $6a(a + 5b + 2c)$ | r $3x(x^2 + 3x + 9)$ |

2.

Expand and then simplify by collecting like terms:

- | | |
|----------------------------------|----------------------------------|
| a $m(m + 2) + m(2m + 1)$ | b $x(x + 2) - x^2$ |
| c $3a(a + 2) - 2a^2$ | d $5x(x + 2) - 2$ |
| e $3a(a + 2) + 5a(a + 1)$ | f $4(p + 3q) + 2(p + 2q)$ |
| g $x(x + 3y) + 2x(x + y)$ | h $4(3 + 2x) + 4x(x + 1)$ |

3 Expand and simplify:

- | | | |
|--------------------------------|--------------------------------|--------------------------------|
| a $3(x + 2) - 2(x + 1)$ | b $4(x - 7) - 2(3 - x)$ | c $3(x - 2) - 2(x + 2)$ |
| d $3(y - 4) - 2(y + 3)$ | e $5(y + 2) - 2(y - 3)$ | f $6(b - 3) - 3(b - 1)$ |

4 Expand and simplify:

- | | | |
|---------------------------------|----------------------------------|---------------------------------|
| a $x(x + 4) - x(x + 2)$ | b $x(2x - 1) - x(7 - x)$ | c $-(x + 6) - 2(x + 1)$ |
| d $-2(x - 1) - 3(5 - x)$ | e $-a(a + 2) - 2a(1 - a)$ | f $-(11 - a) - 2(a + 6)$ |

EQUATIONS

5 Solve for x :

- | | | |
|---------------------------|----------------------------|---------------------------|
| a $2(2x + 1) = 30$ | b $3(4x - 3) = -12$ | c $4(2x - 7) = 20$ |
| d $7(3x - 4) = 63$ | e $6(3x + 3) = -72$ | f $-2(6x - 3) = 6$ |

6 Solve the following equations:

- | | | |
|--------------------------------|---------------------------------|---------------------------------|
| a $4a + 3 = 19$ | b $\frac{x}{4} + 5 = 2$ | c $\frac{y}{3} - 1 = 6$ |
| d $4(x + 2) = 20$ | e $6(m - 9) = 18$ | f $3x - 5 = 28$ |
| g $\frac{a}{4} + 2 = 7$ | h $\frac{x + 14}{2} = 8$ | i $\frac{5m - 4}{9} = 4$ |

Solve the following equations:

a $2 - x = 3(x + 3) + 1$

c $12 - x = 2(x - 2) + x$

e $3x + 2(x + 1) = 8$

g $x + 2 - 4(x - 1) = 11$

i $3(1 - x) - 2(2 - x) = 4$

k $4(2x - 3) - 5(3x + 1) = -2$

m $2(1 - 3x) - (5 - x) = 7$

b $2x + 1 = 2(1 - 3x) + 7$

d $4 + 3p = 2 + 5(1 - p)$

f $4x - 1 + 3(2x - 2) = 4$

h $2(x - 1) - 5(x + 2) = -8$

j $5(x - 2) + 3(1 - 2x) = 6$

l $3 - 2x - (x + 4) = -11$

n $4x + 2(x - 1) + x = 9$