Unit Four

Change, Time & The Metric System

Topic A: Counting to Make Change

Practice your counting by filling in the counting chart. Have your instructor check your chart when you are done.

0	1	2	3	4	5	6	7	8	9
10									

Use your counting chart and start at 0. Count two and write down that number.

0	**2**	**4**							

If you had a pile of twonies or two dollar coins and wanted to know how much money you have, you would count by 2's.

Use your counting chart and start at 0. Count five and write down that number.

0	**5**	**10**							

If you had a pile of nickels or five dollar bills and wanted to know how much money you have, you would count by 5's.

Use your counting chart and start at 0. Count ten and write down that number.

0	**10**	**20**							

If you had a pile of dimes or ten dollar bills and wanted to know how much money you have, you would count by 10's.

Use your counting chart and start at 0. Count twenty and write down that number.

0	**20**	**40**			

If you had a pile of twenty dollar bills and wanted to know how much money you have, you would count by 20's.

Use your counting chart and start at 0. Count twenty-five and write down that number.

0	**25**			

If you had a pile of quarters and wanted to know how much money you have, you would count by 25's.

Exercise One

Write the missing numerals. Check your work using the answer key at the end of the exercise.

a) Count by 5's.

0		**10**		**20**		**30**		**40**	
50		**60**		**70**		**80**		**90**	

b) Count by 5's.

0	**5**		**15**		**25**		**35**		**45**
	55		**65**		**75**		**85**		**95**

c) Count by 5's.

0									

d) Count by 10's.

0	**10**		**30**		**50**		**70**		**90**

e) Count by 10's.

0		**20**		**40**		**60**		**80**	
100									

f) Count by 10's.

0									

g) Count by 20's

0		**40**		**80**	

h) Count by 20's

0					

i) Count by 25's.

0	**25**		**75**	

j) Count by 25's.

0		**50**		**100**

k) Count by 25's.

0				

Answers to Exercise One

a) Count by 5's

0	***5***	**10**	***15***	**20**	***25***	**30**	***35***	**40**	***45***
50	***55***	**60**	***65***	**70**	***75***	**80**	***85***	**90**	***95***
100									

b) Count by 5's

0	**5**	***10***	**15**	***20***	**25**	***30***	**35**	***40***	**45**
50	**55**	***60***	**65**	***70***	**75**	***80***	**85**	***90***	**95**
100									

c) Count by 5's

0	***5***	***10***	***15***	***20***	***25***	***30***	***35***	***40***	***45***
50	***55***	***60***	***65***	***70***	***75***	***80***	***85***	***90***	***95***
100									

d) Count by 10's

0	**10**	***20***	**30**	***40***	**50**	***60***	**70**	***80***	**90**
100									

e) Count by 10's

0	***10***	**20**	***30***	**40**	***50***	**60**	***70***	**80**	***90***
100									

f) Count by 10's

0	***10***	***20***	***30***	***40***	***50***	***60***	***70***	***80***	***90***
100									

g) Count by 20's

0	***20***	**40**	***60***	**80**	***100***

h) Count by 20's

0	***20***	***40***	***60***	***80***	***100***

i) Count by 25's

0	**25**	***50***	**75**	***100***

j) Count by 25's

0	***25***	**50**	***75***	**100**

k) Count by 25's

0	***25***	***50***	***75***	***100***

Note: There is no self-test for this topic.

Topic B: Making Change

When you make change, your first goal is to get a number that ends in 0 or 5. For example, if you bought something for $4, the first thing to do would be to get to $5. Check out example A below.

Example A: $4 to $5

To get from $4 to $5, you would need 1 loonie.

Example B: $23 to $25

To get from $23 to $25, you would need 1 twonie.

Example C: $55 to $60

To get from $55 to $60, you would need 1 five dollar bill.

Exercise One

Circle the number of coins or bills you would need to get from the first number to the second number. Make sure to use the least number of coins or bills. Check your work using the answer key at the end of the exercise.

a) $33 to $35

b) $48 to $50

c) $16 to $20

d) $68 to $70

e) $10 to $15

f) $35 to $40

g) $55 to $60

h) $85 to $90

i) $60 to $70

j) $90 to $100

k) $30 to $40

l) $40 to $50

m) $30 to $50

n) $70 to $80

o) $80 to $100

p) $45 to $50

q) $21 to $25

r) $55 to $60

s) $45 to $50

t) $40 to $50

u) $70 to $80

Answers to Exercise One

a)	1 twonie	b)	1 twonie	c)	2 twonies	d)	1 twonie	e)	1 - $5	f)	1 - $5	g)	1 - $5
h)	1 - $5	i)	1 - $10	j)	1 - $10	k)	1 - $10	l)	1 - $10	m)	1 - $20	n)	1 - $10
o)	1 - $20	p)	1 - $5	q)	2 twonies	r)	1 - $5	s)	1 - $5	t)	1 - $10	u)	1 - $10

Exercise Two

State the number and kind of coins and bills you would need to get from the first number to the second number. Make sure you use the least number of coins and bills as possible. Check your work using the answer key at the end of the exercise.

Example: **$56 to $60**
2 twonies to get to $60.

a) $28 to $30

b) $35 to $40

c) $90 to $100

d) $30 to $50

e) $54 to $55

f) $30 to $50

g) $65 to $70

h) $45 to $50

i) $80 to $100

j) $41 to $45

k) $6 to $10

l) $55 to $60

m) $15 to $20

n) $55 to $60

o) $88 to $90

p) $23 to $25

q) $86 to $90

r) $80 to $100

s) $98 to $100

t) $75 to $80

u) $46 to $50

Answers to Exercise Two

a)	1 twonie	b)	1 - $5	c)	1 - $10	d)	1 - $20	e)	1 loonie	f)	1 - $20	g)	1 - $5
h)	1 - $5	i)	1 - $20	j)	2 twonies	k)	2 twonies	l)	1 - $5	m)	1 - $5	n)	1 - $5
o)	1 twonie	p)	1 twonie	q)	2 twonies	r)	1 - $20	s)	1 twonie	t)	1 - $5	u)	2 twonies	

Example A: **$28 to $50**

Need	To get to
1 twonie	$30
1 - $20 bill	$50

Example B: **$36 to $50**

Need	To get to
2 twonies	$40
1 - $10 bill	$50

Example C: **$63 to $80**

Need	To get to
1 twonie	$65
1 - $5 bill	$70
1 - $10 bill	$80

Exercise Three

State the number and kind of coins and bills you would need to get from the first number to the second number. Make sure you use the least number of coins and bills as possible. Check your work using the answer key at the end of the exercise.

Example: $67 to $80

Need	To get to
1 loonie	$68
1 twonie	$70
1 - $10 bill	$80

a) $26 to $40

Need	To get to

b) $47 to $60

Need	To get to

c) $69 to $80

Need	To get to

d) $18 to $20

Need	To get to

e) $34 to $50

Need	To get to

h) $82 to $100

Need	To get to

f) $51 to $60

Need	To get to

i) $93 to $100

Need	To get to

g) $78 to $100

Need	To get to

j) $3 to $10

Need	To get to

k) $61 to $80

Need	To get to

n) $64 to $80

Need	To get to

l) $58 to $100

Need	To get to

o) $9 to $20

Need	To get to

m) $22 to $40

Need	To get to

p) $72 to $100

Need	To get to

q) $43 to $60

Need	To get to

t) $86 to $100

Need	To get to

r) $84 to $100

Need	To get to

u) $11 to $20

Need	To get to

s) $37 to $50

Need	To get to

v) $73 to $100

Need	To get to

Answers to Exercise Three

a) $26 to $40

Need	To get to
2 twonies	*$30*
1 - $10	*$40*

b) $47 to $60

Need	To get to
1 loonie	*$48*
1 twonie	*$50*
1 - $10	*$60*

c) $69 to $80

Need	To get to
1 loonie	*$70*
1 - $10	*$80*

d) $18 to $20

Need	To get to
1 twonie	*$20*

e) $34 to $50

Need	To get to
1 loonie	*$35*
1 - $5	*$40*
1 - $10	*$50*

f) $51 to $60

Need	To get to
2 twonies	*$55*
1 - $5	*$60*

g) $78 to $100

Need	To get to
2 twonies	*$80*
1 - $20	*$100*

h) $82 to $100

Need	To get to
1 loonie	*$83*
1 twonie	*$85*
1 - $5	*$90*
1 - $10	*$100*

i) $93 to $100

Need	To get to
1 twonie	*$95*
1 - $5	*$100*

j) $3 to $10

Need	To get to
1 twonie	*$5*
1 - $5	*$10*

k) $61 to $80

Need	To get to
2 twonies	*$65*
1 - $5	*$70*
1 - $10	*$80*

l) $58 to $100

Need	To get to
1 twonie	*$60*
2 - $20	*$100*

m) $22 to $40

Need	To get to
1 loonie	*$23*
1 twonie	*$25*
1 - $5	*$30*
1 - $10	*$40*

n) $64 to $80

Need	To get to
1 loonie	*$65*
1 - $5	*$70*
1 - $10	*$80*

o) $9 to $20

Need	To get to
1 loonie	*$10*
1 - $10	*$20*

p) $72 to $100

Need	To get to
1 loonie	*$73*
1 twonie	*$75*
1 - $5	*$80*
1 - $20	*$100*

q) $43 to $60

Need	To get to
1 twonie	*$45*
1 - $5	*$50*
1 - $10	*$60*

r) $84 to $100

Need	To get to
1 loonie	*$85*
1 - $5	*$90*
1 - $10	*$100*

s) $37 to $50

Need	To get to
1 loonie	*$38*
1 twonie	*$40*
1 - $10	*$50*

t) $86 to $100

Need	To get to
2 twonies	*$90*
1 - $10	*$100*

u) $11 to $20

Need	To get to
2 twonies	*$15*
1 - $5	*$20*

v) $73 to $100

Need	To get to
1 twonie	*$75*
1 - $5	*$80*
1 - $20	*$100*

Exercise Four

State the number and kind of coins and bills you would need to get from the first number to the second number. Make sure you use the least number of coins and bills as possible. Check your work using the answer key at the end of the exercise.

Example: **$67 to $80**

Need	To get to
1 loonie	$68
1 twonie	$70
1 - $10 bill	$80

a) $33 to $50

Need	To get to

b) $6 to $20

Need	To get to

c) $76 to $100

Need	To get to

f) $17 to $50

Need	To get to

d) $53 to $60

Need	To get to

g) $92 to $100

Need	To get to

e) $62 to $80

Need	To get to

h) $26 to $50

Need	To get to

i) $46 to $60

Need	To get to

l) $4 to $20

Need	To get to

j) $73 to $80

Need	To get to

m) $37 to $50

Need	To get to

k) $83 to $100

Need	To get to

n) $98 to $100

Need	To get to

o) $63 to $80

Need	To get to

r) $23 to $50

Need	To get to

p) $42 to $50

Need	To get to

s) $56 to $100

Need	To get to

q) $19 to $50

Need	To get to

t) $31 to $50

Need	To get to

u) $89 to $100

Need	To get to

v) $32 to $50

Need	To get to

Answers to Exercise Four

a) $33 to $50

Need	To get to
1 twonie	*$35*
1 - $5	*$40*
1 - $10	*$50*

b) $6 to $20

Need	To get to
2 twonies	*$10*
1 - $10	*$20*

c) $76 to $100

Need	To get to
2 twonies	*$80*
1 - $20	*$100*

d) $53 to $60

Need	To get to
1 twonie	*$55*
1 - $5	*$60*

e) $62 to $80

Need	To get to
1 loonie	*$63*
1 twonie	*$65*
1 - $5	*$70*
1 - $10	*$80*

f) $17 to $50

Need	To get to
1 loonie	*$18*
1 twonie	*$20*
1 - $10	*$30*
1 - $20	*$50*

g) $92 to $100

Need	To get to
1 loonie	*$93*
1 twonie	*$95*
1 - $5	*$100*

h) $26 to $50

Need	To get to
2 twonies	*$30*
1 - $20	*$50*

i) $46 to $60

Need	To get to
2 twonies	*$50*
1 - $10	*$60*

j) $73 to $80

Need	To get to
1 twonie	*$75*
1 - $5	*$80*

k) $83 to $100

Need	To get to
1 twonie	*$85*
1 - $5	*$90*
1 - $10	*$100*

l) $4 to $20

Need	To get to
1 loonie	*$5*
1 - $5	*$10*
1 - $10	*$20*

m) $37 to $50

Need	To get to
1 loonie	*$38*
1 twonie	*$40*
1 - $10	*$50*

n) $98 to $100

Need	To get to
1 twonie	*$100*

o) $63 to $80

Need	To get to
1 twonie	*$65*
1 - $5	*$70*
1 - $10	*$80*

p) $42 to $50

Need	To get to
1 loonie	*$43*
1 - twonie	*$45*
1 - $5	*$50*

q) $19 to $50

Need	To get to
1 loonie	*$20*
1 - $10	*$30*
1 - $20	*$50*

r) $23 to $50

Need	To get to
1 twonie	*$25*
1 - $5	*$30*
1 - $20	*$50*

s) $56 to $100

Need	To get to
2 twonies	*$60*
2 - $20	*$100*

t) $31 to $50

Need	To get to
2 twonies	*$35*
1 - $5	*$40*
1 - $10	*$50*

u) $89 to $100

Need	To get to
1 loonie	*$90*
1 - $10	*$100*

v) $32 to $50

Need	To get to
1 loonie	*$33*
1 twonie	*$35*
1 - $5	*$40*
1 - $10	*$50*

Exercise Five

State the number and kind of coins and bills you would need to get change from $100. Make sure you use the least number of coins and bills as possible. Check your work using the answer key at the end of the exercise.

Example: $65 to $100

Need	To get to
1 - $5 bill	**$70**
1 - $10 bill	**$80**
1 - $20 bill	**$100**

a) $26

Need	To get to

d) $13

Need	To get to

b) $57

Need	To get to

e) $49

Need	To get to

c) $38

Need	To get to

f) $74

Need	To get to

g) $81

Need	To get to

j) $8

Need	To get to

h) $70

Need	To get to

k) $66

Need	To get to

i) $29

Need	To get to

l) $12

Need	To get to

m) $7

Need	To get to

n) $39

Need	To get to

o) $52

Need	To get to

p) $83

Need	To get to

q) $97

Need	To get to

r) $48

Need	To get to

s) $61

Need	To get to

u) $91

Need	To get to

t) $26

Need	To get to

v) $67

Need	To get to

Answers to Exercise Five

a) $26

Need	To get to
2 twonies	*$30*
1 - $10	*$40*
3 - $20	*$100*

b) $57

Need	To get to
1 loonie	*$58*
1 twonie	*$60*
2 - $20	*$100*

c) $38

Need	To get to
1 twonie	*$40*
3 - $20	*$100*

d) $13

Need	To get to
1 twonie	*$15*
1 - $5	*$20*
4 - $20	*$100*

e) $49

Need	To get to
1 loonie	*$50*
1 - $10	*$60*
2 - $20	*$100*

f) $74

Need	To get to
1 loonie	*$75*
1 - $5	*$80*
1 - $20	*$100*

g) $81

Need	To get to
2 twonies	*$85*
1 - $5	*$90*
1 - $10	*$100*

h) $70

Need	To get to
1 - $10	*$80*
1 - $20	*$100*

i) $29

Need	To get to
1 loonie	*$30*
1 - $10	*$40*
3 - $20	*$100*

j) $8

Need	To get to
1 twonie	*$10*
1 - $10	*$20*
4 - $20	*$100*

k) $66

Need	To get to
2 twonies	$70
1 - $10	$80
1 - $20	$100

l) $12

Need	To get to
1 loonie	*$13*
1 twonie	*$15*
1 - $5	*$20*
4 - $20	*$100*

m) $7

Need	To get to
1 loonie	*$8*
1 twonie	*$10*
1 - $10	*$20*
4 - $20	*$100*

n) $39

Need	To get to
1 loonie	*$40*
3 - $20	*$100*

o) $52

Need	To get to
1 loonie	*$53*
1 twonie	*$55*
1 - $5	*$60*
2 - $20	*$100*

p) $83

Need	To get to
1 twonie	*$85*
1 - $5	*$90*
1 - $10	*$100*

q) $97

Need	To get to
1 loonie	*$98*
1 twonie	*$100*

r) $48

Need	To get to
1 twonie	*$50*
1 - $10	*$60*
2 - $20	*$100*

s) $61

Need	To get to
2 twonies	*$65*
1 - $5	*$70*
1 - $10	*$80*
1 - $20	*$100*

t) $26

Need	To get to
2 twonies	*$30*
1 - $10	*$40*
3 - $20	*$100*

u) $91

Need	To get to
2 twonies	*$95*
1 - $5	*$100*

v) $67

Need	To get to
1 loonie	*$68*
1 twonie	*$70*
1 - $10	*$80*
1 - $20	*$100*

Exercise Six

State the number and kind of coins and bills you would need to get from the first number to the second number. Make sure you use the least number of coins and bills as possible. Check your work using the answer key at the end of the exercise.

Example A: $2.69 from $5.00

Need	To get to
1 penny	$2.70
1 nickel	$2.75
1 quarter	$3.00
1 twonie	$5.00

Example B: $6.29 from $10.00

Need	To get to
1 penny	$6.30
2 dimes	$6.50
2 quarters	$7.00
1 loonie	$8.00
1 twonie	$10.00

Example C: $12.49 from $20.00

Need	To get to
1 penny	$12.50
2 quarters	$13.00
1 twonie	$15.00
1 - $5 bill	$20.00

a) $2.19 from $10.00

Need	To get to

d) $3.35 from $10.00

Need	To get to

b) $6.48 from $20.00

Need	To get to

e) $17.81 from $20.00

Need	To get to

c) $8.67 from $20.00

Need	To get to

f) $50.22 from $60.00

Need	To get to

g) $20.51 from $40.00

Need	To get to

h) $37.72 from $50.00

Need	To get to

i) $19.87 from $50.00

Need	To get to

j) $4.36 from $5.00

Need	To get to

k) $44.54 from $60.00

Need	To get to

l) $29.14 from $40.00

Need	To get to

m) $65.76 from $80.00

Need	To get to

p) $32.02 from $35.00

Need	To get to

n) $41.98 from $60.00

Need	To get to

q) $58.27 from $100

Need	To get to

o) $97.69 from $100

Need	To get to

r) $61.15 from $80.00

Need	To get to

s) $72.84 from $100

Need	To get to

u) $5.23 from $20.00

Need	To get to

t) $83.91 from $100

Need	To get to

v) $19.56 from $40.00

Need	To get to

Answers to Exercise Six

a) $2.19 from $10.00

Need	To get to
1 - penny	*$2.20*
1 - nickel	*$2.25*
3 - quarters	*$3*
1 twonie	*$5*
1 - $5	*$10*

b) $6.48 from $20.00

Need	To get to
2 - pennies	*$6.50*
2 - quarters	*$7*
1 loonie	*$8*
1 twonie	*$10*
1 - $10	*$20*

c) $8.67 from $20.00

Need	To get to
3 - pennies	*$8.70*
1 - nickel	*$8.75*
1 - quarter	*$9*
1 loonie	*$10*
1 - $10	*$20*

d) $3.35 from $10.00

Need	To get to
1 - nickel	*$3.40*
1 - dime	*$3.50*
2 - quarters	*$4*
1 loonie	*$5*
1 - $5	*$10*

e) $17.81 from $20.00

Need	To get to
4 – pennies	*$17.85*
1 – nickel	*$17.90*
1 - dime	*$18*
1 twonie	*$20*

f) $50.22 from $60.00

Need	To get to
3 – pennies	*$50.25*
3 - quarters	*$51*
2 twonies	*$55*
1 - $5	*$60*

g) $20.51 from $40.00

Need	To get to
4 - pennies	*$20.55*
2 - dimes	*$20.75*
1 - quarter	*$21*
2 twonies	*$25*
1 - $5	*$30*
1 - $10	*$40*

h) $37.72 from $50.00

Need	To get to
3 – pennies	*$37.75*
1 - quarter	*$38*
1 twonie	*$40*
1 - $10	*$50*

i) $19.87 from $50.00

Need	To get to
3 – pennies	*$19.90*
1 - dime	*$20*
1 - $10	*$30*
1 - $20	*$50*

j) $4.36 from $5.00

Need	To get to
4 – pennies	*$4.40*
1 – dime	*$4.50*
2 - quarters	*$5*

k) $44.54 from $60.00

Need	To get to
1 – penny	*$44.55*
2 - dimes	*$44.75*
1 - quarter	*$45*
1 - $5	*$50*
1 – $10	*$60*

l) $29.14 from $40.00

Need	To get to
1 – penny	*$29.15*
1 - dime	*$29.25*
3 - quarters	*$30*
1 - $10	*$40*

m) $65.76 from $80.00

Need	To get to
4 - pennies	*$65.80*
2 - dimes	*$66*
2 twonies	*$70*
1 - $10	*$80*

n) $41.98 from $60.00

Need	To get to
2 - pennies	*$42*
1 loonie	*$43*
1 twonie	*$45*
1 - $5	*$50*
1 - $10	*$60*

o) $97.69 from $100

Need	To get to
1 – penny	*$97.70*
1 – nickel	*$97.75*
1 - quarter	*$98*
1 twonie	*$100*

p) $32.02 from $35.00

Need	To get to
3 - pennies	*$32.05*
2 - dimes	*$32.25*
3 - quarters	*$33*
1 twonie	*$35*

q) $58.27 from $100

Need	To get to
3 - pennies	*$58.30*
2 - dimes	*$58.50*
2 - quarters	*$59*
1 loonie	*$60*
2 - $20	*$100*

r) $61.15 from $80.00

Need	To get to
1 - dime	*$61.25*
3 - quarters	*$62*
1 loonie	*$63*
1 twonie	*$65*
1 - $5	*$70*
1 - $10	*$80*

s) $72.84 from $100

Need	To get to
1 – penny	*$72.85*
1 – nickel	*$72.90*
1 - dime	*$73*
1 twonie	*$75*
1 - $5	*$80*
1 - $20	*$100*

t) $83.91 from $100

Need	To get to
4 – pennies	*$83.95*
1 - nickel	*$84*
1 loonie	*$85*
1 - $5	*$90*
1 - $10	*$100*

u) $5.23 from $20.00

Need	To get to
2 – pennies	*$5.25*
3 - quarters	*$6*
2 twonies	*$10*
1 - $10	*$20*

v) $19.56 from $40.00

Need	To get to
4 – pennies	*$19.60*
1 – nickel	*$19.65*
1 - dime	*$19.75*
1 - quarter	*$20*
1 - $20	*$40*

Exercise Seven

State the number and kind of coins and bills you would need to get from the first number to the second number. Make sure you use the least number of coins and bills as possible. Check your work using the answer key at the end of the exercise.

a) $1.74 from $10.00

Need

b) $54.05 from $60.00

Need

c) $96.43 from $100

Need

e) $73.97 from $80.00

Need

d) $28.16 from $40.00

Need

f) $32.81 from $50

Need

g) $9.38 from $20

Need

i) $16.32 from $50

Need

h) $85.25 from $100

Need

j) $48.03 from $50

Need

k) $64.70 from $100

Need

m) $21.51 from $40

Need

l) $59.69 from $100

Need

n) $7.62 from $20

Need

o) $18.47 from $50

Need

q) $83.26 from $100

Need

p) $37.82 from $50

Need

r) $46.93 from $50

Need

s) $75.15 from $80

Need

u) $92.58 from $100

Need

t) $69.40 from $100

Need

v) $31.60 from $40

Need

Answers to Exercise Seven

a) $1.74 from $10.00

Need
1 – penny
1 - quarter
1 loonie
1 twonie
1 - $5

b) $54.05 from $60.00

Need
2 – dimes
3 - quarters
1 - $5

c) $96.43 from $100

Need
2 – pennies
1 – nickel
2 - quarters
1 loonie
1 twonie

d) $28.16 from $40.00

Need
4 – pennies
1 – nickel
3 - quarters
1 loonie
1 - $10

e) $73.97 from $80.00

Need
3 - pennies
1 loonie
1 - $5

f) $32.81 from $50

Need
4 - pennies
1 – nickel
1 - dime
1 twonie
1 - $5
1 - $10

g) $9.38 from $20

Need
2 pennies
1 dime
2 quarters
1 - $10

h) $85.25 from $100

Need
3 quarters
2 twonies
1 - $10

i) $16.32 from $50

Need
3 pennies
1 nickel
1 dime
2 quarters
1 loonie
1 twonie
1 - $10, 1 - $20

j) $48.03 from $50

Need
2 pennies
2 dimes
3 quarters
1 loonie

k) $64.70 from $100

Need
1 nickel
1 quarter
1 - $5
1 - $10
1 - $20

l) $59.69 from $100

Need
1 penny
1 nickel
1 quarter
2 - $20

m) $21.51 from $40

Need
4 pennies
2 dimes
1 quarter
1 loonie
1 twonie
1 - $5, 1 - $10

n) $7.62 from $20

Need
3 pennies
1 dime
1 quarter
1 twonie
1 - $10

o) $18.47 from $50

Need
3 pennies
2 quarters
1 loonie
1 - $10
1 - $20

p) $37.82 from $50

Need
3 pennies
1 nickel
1 dime
1 - twonie
1- $10

q) $83.26 from $100

Need
4 pennies
2 dimes
2 quarters
1 loonie
1- $5
1- $10

r) $46.93 from $50

Need
2 pennies
1 nickel
1 loonie
1 twonie

s) $75.15 from $80

Need
1 dime
3 quarters
2 twonies

t) $69.40 from $100

Need
1 dime
2 quarters
1 - $10
1 - $20

u) $92.58 from $100

Need
2 pennies
1 nickel
1 dime
1 quarter
1 twonie
1 - $5

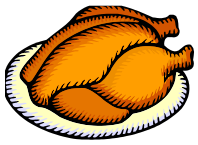
v) $31.60 from $40

Need
1 nickel
1 dime
1 quarter
1 loonie
1 twonie
1 - $5

Exercise Eight

State the number and kind of coins and bills you would need to get change from $100. Make sure you use the least number of coins and bills as possible. Check your work using the answer key at the end of the exercise.

a)



2 kg of chicken for $24.59

b)

DVD Player for $25.73

c)

Metal shelf for $75.59

d)

Heavy duty drill costs $89.89

e)

Skates cost $67.49

f)

Floor lamp costs $73.91

g)

coffee maker costs $22.39

h)

a package of toilet paper costs $6.71

i)

a box of laundry detergent costs $13.43

j)

a can of baby formula costs $30.23

Answers to Exercise Eight

a) 1 penny, 1 nickel, 1 dime, 1 quarter, 1 - $5, 1 - $10, 3 - $20

b) 2 pennies, 1 quarter, 2 twonies, 1 - $10, 3 - $20

c) 1 penny, 1 nickel, 1 dime, 1 quarter, 2 twonie, 1 - $20

d) 1 penny, 1 dime, 1 - $10

e) 1 penny, 2 quarters, 1 twonie, 1 - $10, 1 - $20

f) 4 pennies, 1 nickel, 1 loonie, 1 - $5, 1 - $20

g) 1 penny, 1 dime, 2 quarters, 1 twonie, 1 - $5, 1 - $10, 3 - $20

h) 4 pennies, 1 quarter, 1 loonie, 1 twonie, 1 - $10, 4 - $20

i) 2 pennies, 1 nickel, 2 quarters, 1 loonie, 1 - $5, 4 - $20

j) 2 pennies, 3 quarters, 2 twonies, 1 - $5, 3 - $20

Exercise Nine

State the number and kind of coins and bills you would need to get change from $100. Make sure you use the least number of coins and bills as possible. Check your work using the answer key at the end of the exercise.

a) Mrs. Bhabra bought a food processor that cost $55.99. What change will she get from $100?

b) Pablo bought Lego for $30.23. What change will she get from $100?

c) A case of 6 bottles of motor oil costs $43.67. What change will you get from $100?

d) Shampoo costs $3.99 and conditioner costs $4.99. Together with taxes they cost $10.06. What change will you get from $100?

Answers to Exercise Nine

a) 1 penny, 2 twonies, 2 - $20

b) 2 pennies, 3 quarters, 2 twonies, 1 - $5, 3 - $20

c) 3 pennies, 1 nickel, 1 quarter, 1 loonie, 1 - $5, 1 - $10, 2 - $20

d) 4 pennies, 1 nickel, 1 dime, 3 quarters, 2 twonies, 1 - $5, 4 - $20

Topic B: Self-Test

Mark /21 Aim 17/21

A. Circle the number of coins and bills needed to get from the first number to the second number. Use the least number of coins. 4 marks

a) $76 to $80

b) $22 to $25

c) $40 to $50

d) $55 to $60

B. State the number and kind of coins or bills are needed to get from the first number to the second number. 4 marks

a) $48 to $50

b) $76 to $80

c) $95 to $100

d) $40 to $50

C. State the number and kind of coins and bills you would need to get from the first number to the second number. Make sure you use the least number of coins and bills as possible. 4 marks

a) $37 to $50

b) $16 to $50

c) $42 to $60

d) $81 to $100

D. State the number and kind of coins and bills you would need to get change from $100. Make sure you use the least number of coins and bills as possible. (9 marks)

a) $23

b) $41

c) $68

d) $72

e) groceries cost $89.63

f) telephone bill was $51.08

g) gas for the car cost $61.59

h) Mr. Czelinski bought a new vacuum cleaner for $86.32. What change will get from $100?

i) Mrs. Uchida bought a new frying pan for $39.19. How much change will she get back from $100?

Answers to Topic B Self-Test

A.

a) 2 twonies b) 1 loonie, 1 twonie c) 1 - $10 d) 1 - $5

B.

a) 1 twonie b) 2 twonies c) 1 - $5 d) 1 - $10

C.

a) 1 loonie, 1 twonie, 1 - $10
b) 2 twonies, 1- $10, 1 - $20
c) 1 loonie, 1 twonie, 1 - $5, 1 - $10
d) 2 twonies, 1 - $5, 1 - $10

D.

a) 1 twonie, 1 - $5, 1 - $10, 3 - $20
b) 2 twonies, 1 - $5, 1 - $10, 2 - $20
c) 1 twonie, 1 - $10, 1 - $20
d) 1 loonie, 1 twonie, 1 - $5, 1 - $20
e) 2 pennies, 1 dime, 1 quarter, 1 - $10
f) 2 pennies, 1 nickel, 1 dime, 3 quarters, 1 loonie, 1 twonie, 1 - $5, 2 - $20
g) 1 penny, 1 nickel, 1 dime, 1 quarter, 1 loonie, 1 twonie, 1 - $5, 1 - $10, 1 - $20
h) 3 pennies, 1 nickel, 1 dime, 2 quarters, 1 loonie, 1 twonie, 1 - $10
i) 1 penny, 1 nickel, 3 quarters, 3 - $20

Topic C: Converting Units of Time

When working with time units, sometimes you will need to convert from one unit of time to another. You must multiply or divide by the factors (such as 60 min = 1 h, 7 days = 1 week) shown below.

CONVERSION FACTORS
60 seconds = 1 minute
60 minutes = 1 hour
24 hours = 1 day
7 days = 1 week
365 days = 1 year

To convert from smaller time units to larger time units, divide.

- To convert seconds to minutes, divide by 60 (60 s = 1)
- To convert minutes to hours, divide by 60 (60 min = 1 h)
- To convert hours to days, divide by 24 (24 h = 1 d)

To convert seconds to minutes

Use conversion factor: 60 seconds = 1 minute

number of seconds ÷ 60 = number of minutes

Example A: 85 seconds = __ min

85 ÷ 60 = 1 R25

$$\begin{array}{r} 1 \\ 60\overline{)85} \\ \underline{60} \\ 25 \end{array}$$

85 s = 1 min, 25 s

Example B: 125 seconds = __ min

125 ÷ 60 = 2 R5

$$\begin{array}{r} 2 \\ 60\overline{)125} \\ \underline{120} \\ 5 \end{array}$$

125 s = 2 min, 5s

To convert minutes to hours:

Use conversion factor: 60 minutes = 1 hour

min ÷ 60 = h

Example A: 97 minutes = __ hours

97 min ÷ 60 = 1R37

$$\begin{array}{r} 1 \\ 60\overline{)97} \\ \underline{60} \\ 37 \end{array}$$

97 min = 1 h, 37 min

Example B: **180 minutes = __ hours**

$180 \div 60 = 3$

$$60\overline{)180}\quad \begin{array}{r} 3 \\ \underline{180} \\ 0 \end{array}$$

180 min = 3 h

To convert hours to days:

Use conversion factor: 24 hours = 1 day

number of hours ÷ 24 = number of days

Example A: **50 hours = __ days**

$50 \div 24 = 2\ R2$

$$24\overline{)50}\quad \begin{array}{r} 2 \\ \underline{48} \\ 2 \end{array}$$

50 h = 2 d, 2 h

Example B: **72 hours = __ days**

$72 \div 24 = 3$

$$24\overline{)72}\quad \begin{array}{r} 3 \\ \underline{72} \\ 0 \end{array}$$

72 h = 3 d

Exercise One

Convert the time units. The answers should be in the *simplest form*. Check your work using the answer key at the end of the exercise.

a) 260 min = *4* h, *20* min

$$\begin{array}{r} 4 \\ 60\overline{)260} \\ \underline{240} \\ 20 \end{array}$$

b) 80 s = _____ min, _____ s

c) 75 min = _____ h, _____ min

d) 105 min = _____ h, _____ min

e) 200 s = _____ min, _____ s

f) 29 h = _____ d, _____ h

g) 36 h = _____ d, _____ h

h) 90 h = _____ d, _____h

i) 220 s = _____ min, _____ s

j) 78 h = _____ d, _____ h

k) 240 min = _____ h, _____ min

l) 155 s = _____min, _____ s

m) 50 h = _____ d, _____ h

n) 190 min = _____h, _____ m

o) 140 s = _____ min, _____ s

p) 274 m = _____ h, _____ min

q) 415 d = _____y, _____ d

r) 724 d = _____y, _____ d

Answers to Exercise One

a) 4 h, 20 min	b) 1 min, 20 s	c) 1 h, 15 min	d) 1 h, 45 min
e) 3 min, 20 s	f) 1 d, 5 h	g) 1 d, 12 h	h) 3 d, 18 h
i) 3 min, 40 s	j) 3 d, 6 h	k) 4 h, 0 min	l) 2 min, 35 s
m) 2 d, 2 h	n) 3 h, 10 min	o) 2 min, 20 s	p) 4 h, 34 min
q) 1 y, 50 d	r) 1 y, 359 d		

If you are adding amounts of time for time-sheets or other records, you will often have a total such as the ones shown in the following examples.

Example A: 7 h, 85 min

Convert the 85 min to hours

85 min ÷ 60 = 1 h, 25 min

$$60\overline{)85}\quad 1,\ 60,\ 25$$

Add the 1 h, 25 min to the 7 h

7 h + 1 h, 25 min = 8 h, 25 min

Example B: 40 h, 268 min

Convert the 268 min to hours

268 ÷ 60 = 4 h, 28 min

$$60\overline{)268}\quad 4,\ 240,\ 28$$

Add the 4 h, 28 min to the 40 h

40 h + 4 h, 28 min = 44 h, 28 min

Exercise Two

Convert the time units. The answers should be in the *simplest form*. Check your work using the answer key at the end of the exercise.

a) 35 h, 90 min = _____ h, _____ min

b) 2 h, 75 min = _____ h, _____ min

c) 2 min, 130 s = _____ min, _____ s

d) 9 min, 450 s = _____min, _____s

e) 2 d, 27 h = _____ d, _____ h

f) 8 d, 75 h = _____ d, _____ h

g) 4 min, 170 s = _____min, _____s

h) 5 d, 85 h = _____d, _____ h

i) 46 h, 398 min = _____ h, _____ min

j) 29 d, 168 h = _____ d, _____ h

k) 48 min, 163 s = _____ min, _____ s

l) 11 h, 163 min = _____ h, ____ min

m) 38 h, 318 min = _____ h, _____ min

n) 17 min, 212 s = _____ min _____ s

o) 51 min, 178 s = _____ min, _____ s

p) 8 d, 169 h = _____ d, _____ h

q) 52 d, 78 h = _____ d, _____ h

r) 41 h, 215 min = _____ h, _____ min

Answers to Exercise Two

a) 36 h, 30 min	b) 3 h, 15 min	c) 4 min, 10 s	d) 16 min, 30 s
e) 3 d, 3 h	f) 11 d, 3 h	g) 6 min, 50 s	h) 8 d, 13 h
i) 52 h, 38 min	j) 36 d, 0 h	k) 50 min, 43 s	l) 13 h, 43 min
m) 43 h, 18 min	n) 20 min, 32 s	o) 53 min, 58 s	p) 15 d, 1 h
q) 55 d, 6 h	r) 44 h, 35 min		

Adding Units of Time

- Place the numbers to be added in columns with like units - min with min, h with h, s with s
- Add each column, being sure to write the correct unit of time
- Convert the answer in each column to simplest form and carry units to be added onto the next column as needed.

Example A:

$$\begin{array}{r} 12 \text{ h, } 45 \text{ min} \\ +\ 10 \text{ h, } 30 \text{ min} \\ \hline 22 \text{ h, } 75 \text{ min} \end{array}$$

Convert: 75 min = 1 hr, 15 min
Add: 22 h + 1 h, 15 min = **23 h, 15 min**

Example B:

$$\begin{array}{r} 4 \text{ h, } 50 \text{ min, } 55 \text{ s} \\ +\ 21 \text{ h, } 120 \text{ min, } 40 \text{ s} \\ \hline 25 \text{ h, } 170 \text{ min, } 95 \text{ s} \end{array}$$

Convert: 95 s = 1 min, **35 s**
Add: 170 min + 1 min = 171 min

Convert: 171 min = 2 h, **51 min**
Add: 25 h + 2 h = 27 h

Convert: 27 h = **1 d, 3 h**

The final answer is **1 d, 3 h, 51 min, 35 s**

Exercise Three

Add the times. Check your work using the answer key at the end of the exercise.

a) 5 h, 40 min
+ 4 h, 45 min

b) 12 h, 30 min
+ 15 h, 30 min

c) 4 h, 55 min, 30 s
+ 7 h, 30 min, 45 s

d) 19 h, 50 min
+ 25 h, 40 min

e) 3 h, 30 min
5 h, 40 min
4 h, 45 min
+ 6 h, 30 min

f) 2 h, 25 min, 8 s
12 h, 30 min, 10 s
8 h, 45 min, 55 s
+10 h, 20 min, 30 s

Answers to Exercise Three

a) 10 h, 25 min b) 1 d, 4 h, 0 min c) 12 h, 26 min, 15 s d) 1 d, 21 h, 30 min
e) 20 h, 25 min f) 1 d, 10 h, 1 min, 43 s

To convert from larger time units to smaller time units, multiply.

- To convert hours to minutes, multiply by 60 (1 h = 60 min)
- To convert minutes to seconds, multiply by 60 (1 min = 60 s)
- To convert days to hours, multiply by 24 (1 d = 24 h)

To convert minutes to seconds

Use conversion factor: 1 minute = 60 seconds

number of minutes x 60 = number of seconds

Example A: **5 minutes = __ sec**

5 x 60 =

$$\begin{array}{r} 60 \\ \times\ 5 \\ \hline 300 \end{array}$$

5 min = 300 sec

To convert hours to minutes:

Example B: **24 hours = __ min**

24 x 60 =

$$\begin{array}{r} 24 \\ \times\ 60 \\ \hline 1\,440 \end{array}$$

24 h = 1 440 min

To convert days to hours:

Use conversion factor: 1 day = 24 hours

number of hours x 24 = number of hours

Example A: **7 days = __ hours**

7 x 24 =

$$\begin{array}{r} 24 \\ \times\ 7 \\ \hline 168 \end{array}$$

7 d = 168 h

Example B: **4d, 10 h = ___ h**

4 x 24 =

$$\begin{array}{r} 24 \\ \times\ 4 \\ \hline 96 \end{array}$$

Example C: **14 min, 29 s = __ s**

14 x 60 =

$$\begin{array}{r} 14 \\ \times\ 60 \\ \hline 840 \end{array}$$

840 + 29 = 689 s

14 min, 29 s = 869 s

Exercise Four

Convert the time units. Check your work using the answer key at the end of the exercise.

a) 4 d = ____ h

b) 6 h = ____ min

c) 10 min = ____ s

d) 5 h = ____ min

e) 1 h, 15 min = ____ min

f) 10 min, 30 s = ____ s

g) 2 d, 12 h = ____ h

h) 20 min, 2 s = ____ s

Answers to Exercise Four

a) 96 h b) 360 min c) 600 s d) 300 min e) 75 min f) 630 s g) 60 h h) 1 202 s

Subtracting Units of Time

- Place the numbers to be subtracted in columns with like units.
- Subtract each column, being sure to write the correct units of time. Borrow from the next larger unit of time as needed (see examples)
- Convert the answer to the simplest form.

Example A:

2 h, 40 min
- 1 h, 50 min

50 min cannot be subtracted from 40 min
Borrow 1 h and convert it to minutes to be added to the 40 min

1 h = 60 min 60 min + 40 min = 100 min

The question now looks like this:

1 h, 100 min
- 1 h, 50 min
0 h, 50 min The difference is 50 min

Example B:

5 h, 20 min, 10 s
- 2 h, 35 min, 45 s

Borrow 1 min and convert it to 60 seconds to be added to the 10 seconds

1 min = 60 s 60 s + 10 s = 70 s

The question now looks like this:

5 h, **19 min, 70 s**
- 2 h, 35 min, 45 s
25 s

Borrow 1 h and convert it to 60 min to be added to the 19 min

1 h = 60 min 60 min + 19 min = 79 min

4 h, 79 min, 70 s
- 2 h, 35 min, 45 s
2 h, 44 min, 25 s

The difference is 2 h, 44 min, 25 s.

Exercise Five

Subtract these units of time. Check your work using the answer key at the end of the exercise.

a) 4 h, 2 min
- 2 h, 25 min

b) 5 d, 10 h
- 1 d, 14 h

c) 2 h, 45 min, 12 s
- 50 min, 30 s

d) 4 h, 30 min, 10 s
- 2 h, 25 min, 25 s

e) 2 min, 45 s
- 1 min, 47 s

f) 4 d, 5 h, 16 min
- 2 d, 20 h, 45 min

g) 5 h
- 2 h, 30 min

h) 3 d, 10 h, 45 min
- 22 h

Answers to Exercise Five

a) 1 h, 37 min
b) 3 d, 20 h
c) 1 h, 54 min, 42 s
d) 2 h, 4 min, 45 s
e) 58 s
f) 1 d, 8 h, 31 min
g) 2 h, 30 min
h) 2 d, 12 h, 45 min

Multiplying Units of Time

Multiplying units of time is a practical skill. For example, you may need to figure out the hours you have worked in a week or what you owe the baby-sitter.

To multiply units of time, do this:

- Multiply each unit separately.
- Simplify the answer.

Example A: Joan worked 5 hours and 15 minutes on 3 days last week. How much did she work?

$$\begin{array}{r} 5\text{ h}, 15\text{ min} \\ \times\ 3 \\ \hline 15\text{ h}, 45\text{ min} \end{array}$$

Joan worked 15 h, 45 min.

Example B: Doug worked 7 shifts at the sawmill last month. Each shift is 7 hours, 45 minutes. How much time did he work?

$$\begin{array}{r} 7\text{ h}, 45\text{ min} \\ \times\ 7 \\ \hline 49\text{ h}, 315\text{ min} \end{array}$$

convert 315 min to h $315 \div 60 = 5$ h, 15 min

49 h + 5 h, 30 min = 54 h, 15 min worked

Doug worked 54 h, 15 min.

Exercise Six

Multiply and write the answers in simplest form. Check your work using the answer key at the end of the exercise.

a) 5 h, 20 min × 8 =

b) 12 h, 15 min × 10 =

c) 15 min, 40 s × 5 =

d) 7 h, 30 min × 5 =

e) 20 h × 6 =

f) 4 h, 30 min, 45 s × 2 =

g) If you go to school four days per week and take a 45 min lunch and 40 min in coffee breaks each day, how much time do you spend on lunch and coffee breaks at school each week?

h) Juanita spends 10 min driving to the Park and Ride, 5 min waiting for the bus, 15 min on the bus and 15 min on the Sky Train and then 5 min walking to her office every work day. She spends the same amount of commuting time on the way home.

i) How much time does she spend commuting each day?

ii) Juanita works 230 days in a year. How much time is she spending commuting in a year?

Answers to Exercise Six

a) 1 d, 18 h, 40 min b) 5 d, 2 h, 30 min c) 1 h, 18 min, 20 s d) 1 d, 13 h, 30 min

e) 5 d f) 9 h, 1 min, 30 s g) 5 h, 40 min

h) i) 1 h, 40 min ii) 15 d, 23 h, 20 min

Topic C: Self-Test

Mark /33 Aim 26/33

A. Convert the units of time. The answer should be in *simplest form*. 8 marks

a) 120 s = _____ min

b) 360 min = _____ h

c) 144 h = _____d

d) 730 d = _____y

e) 100 h = _____ d, _____ h

f) 343 s = _____ min, _____ s

g) 373 min = _____ h, _____min

h) 564 d = _____ y, _____ d

B. Convert the units of time. The answer should be in *simplest form*. 6 marks

a) 3 d, 36 h = _____d, _____h

b) 8 min, 98 s = _____min, _____s

c) 5 h, 80 min = _____h, _____ min

d) 7 h, 136 min = _____h, _____min

e) 4 d, 78 h = _____d, _____h

f) 6 min, 143 s = _____min, ____s

C. Add the units of time. The answer should be in *simplest form*. **4 marks**

a) $\begin{array}{r} 10\text{ min, }12\text{ s} \\ +\ 15\text{ min, }52\text{ s} \\ \hline \end{array}$

b) $\begin{array}{r} 8\text{ h, }52\text{ min} \\ +\ 7\text{ h, }44\text{ min} \\ \hline \end{array}$

c) $\begin{array}{r} 5\text{ h, }47\text{ min, }25\text{ s} \\ +\ 6\text{ h, }15\text{ min, }48\text{ s} \\ \hline \end{array}$

d) $\begin{array}{r} 2\text{ h, }29\text{ min} \\ +\ 4\text{ h, }38\text{ min} \\ 3\text{ h, }16\text{ min} \\ \hline \end{array}$

D. Convert the units of time. **6 marks**

a) 7 d = _____ h

b) 15 min = _____ s

c) 5 h = _____ min

d) 3 hr, 11 min = _____min

e) 18 min, 9 s = _____ s

f) 5 d, 3 h = _____ h

E. Subtract the units of time. The answer should be in *simplest form*. 4 marks

a) $\begin{array}{r} 41\text{ min, }10\text{ s} \\ -\ 32\text{ min, }45\text{ s} \\ \hline \end{array}$

b) $\begin{array}{r} 24\text{ h, }22\text{ min} \\ -\ 19\text{ h, }58\text{ min} \\ \hline \end{array}$

c) $\begin{array}{r} 55\text{ h, }17\text{ min} \\ -\ 32\text{ h, }39\text{ min} \\ \hline \end{array}$

d) $\begin{array}{r} 17\text{ h, }11\text{ min, }32\text{ s} \\ -\ 3\text{ h, }28\text{ min, }47\text{ s} \\ \hline \end{array}$

F. Multiply the units of time. The answer should be in *simplest form*. 5 marks

a) $\begin{array}{r} 3\text{ h, }15\text{ min} \\ \times\ 3 \\ \hline \end{array}$

b) $\begin{array}{r} 42\text{ min, }12\text{ s} \\ \times\ 4 \\ \hline \end{array}$

c) $\begin{array}{r} 4\text{ min, }23\text{ s} \\ \times\ 3 \\ \hline \end{array}$

d) $\begin{array}{r} 5\text{h, }21\text{ min, }32\text{ s} \\ \times\ 4 \\ \hline \end{array}$

e) Benito spends 1 h, 38 min at the gym four times a week. How much does he spend at the gym in a week?

Answers to Topic C Self-Test

A.

a) 2 min b) 6 h c) 6 d d) 2 y e) 4 d, 4 h f) 5 min, 43 s
g) 6 h, 13 min h) 1 y, 199 d

B.

a) 4 d, 12 h b) 9 min, 38 s c) 6 h, 20 min. d) 9 h, 16 min
e) 7 d, 6 h f) 8 min, 23 s

C.

a) 26 min, 4 s b) 16 h, 36 min c) 12 h, 3 min, 13 s d) 10 h, 23 min

D.

a) 168 h b) 900 s c) 300 min d) 191 min
e) 1 089 s f) 123 h

E.

a) 8 min, 25 s b) 4 h, 24 min c) 22 h, 38 min d) 13 h, 42 min, 45 s

F.

a) 9 h, 45 min b) 2 h, 48 min, 48 s c) 13 min, 9 s d) 21 h, 26 min, 8 s
e) 6 h, 32 min

Topic D: The Metric System

When you measure something, you are **comparing**. Measurement is comparing something with a **standard unit of measure**.

In the past, units of measure were based on things found in a community. Often, lengths of parts of the body were used to measure.

Unit	Definition
the inch	the width of a thumb
the span	the distance from tip of thumb to tip of little finger when the hand is spread out
the foot	the distance from big toe to heel of foot
the yard (becomes "rod)	the distance from tip of nose to tip of thumb of an outstretched hand and arm
the cubit	the distance from the tip of the middle finger to the elbow
the fathom	the distance from the tip of one hand to the tip of the other with both arms stretched out
the mile	1 000 military double steps in the Roman army (*mile passuum* means "1 000 paces"

The problem with these units was the distances would be different based on the size of the person doing the measuring. The problem grew even more when trade was started between cities.

Over a long period of time, people in different countries came up with different standard units of measure.

The British came up with **imperial units** such as inch, foot, yard and mile.

The French came up with **metric units** such as metre, centimetre, litre and gram.

In Canada, we use both metric and imperial units.

Measuring Length

The basic unit of measure for length is the **metre** (abbreviation **m**). If you stretch your arm straight out beside you, a **metre** is about the distance from the tip of your nose to the tip of your middle finger.

Exercise One

Answer yes or no if you would use a metre to measure. Check your work using the answer key at the end of the exercise.

Example: the length of a table ____yes____

the width of your watchband ____no___

	Item	Yes or No
a	length of your classroom	
b	thickness of a piece of paper	
c	length of your pen or pencil	
d	height of the door	
e	distance from Prince George to Fort Nelson	
f	the width of your baby finger	
g	the size of a postage stamp	
h	the thickness of a quarter	
i	the length of the hallway outside your classroom	
j	the distance from your home to college	
k	the height of your coffee mug	
l	the width of your book	
m	the distance from your home to Moncton, New Brunswick	
n	the length of a city bus	

Answers to Exercise One

a)	yes	b)	no	c)	no	d)	yes	e)	no	f)	no	g)	no
h)	no	i)	yes	j)	no	k)	no	l)	no	m)	no	n)	yes

Exercise Two

Estimate the length of each item. Remember a metre is about the distance from the tip of your nose to the tip of your middle finger when your arm is stretched out beside you. Be sure to include the unit of measure in your answer. Have your instructor check your work.

	Item	Estimate
a	the height of the doorway	
b	the height of your table	
c	the width of the doorway	
d	the length of your arm	
e	the distance from the floor to hip	
f	the distance from the floor to waist	
g	the height of the ceiling	
h	the width of the window	
i	the length of your classroom	
j	the width of your classroom	

Exercise Three

Circle the letter of the most reasonable measure. Remember a metre is about the distance from the tip of your nose to the tip of your middle finger when your arm is stretched out beside you. Check your work using the answer key at the end of the exercise.

a) A person's height
   a) 2 m
   b) 20 m
   c) 200 m

b) The height of a child
   a) 10 m
   b) 100 m
   c) 1 m

c) The length of a house
   a) 150 m
   b) 15 m
   c) 1 m

d) The length of a bed
   a) 200 m
   b) 2 m
   c) 20 m

e) The height of a building
   a) 1 m
   b) 100 m
   c) 10 m

f) The height of a refrigerator
   a) 20 m
   b) 200 m
   c) 2 m

Answers to Exercise Three

a) a b) c c) b d) b e) b f) c

Measuring Small Lengths and Long Distances

It is hard to measure small things using a metre. To measure small things, you can use **centimetre (cm) or millimetre (mm).**

A **centimetre (cm)** is about the width of your baby finger. Remember it is just a guide.

A **millimetre (mm)** is about the thickness of your fingernail.

It is hard to measure long distances using a metre. To measure long distances, you can use **kilometre (km).** A kilometre is 1 000 metres.

Exercise Four

For each item, circle the unit of measure you would use. Check your work using the answer key at the end of the exercise.

	Item	Unit of Measure
a	the width of a room	m cm mm
b	the thickness of a coin	m cm mm
c	the length of your pencil	m cm mm
d	the length of the hall	m cm mm
e	the length of this page	m cm mm
f	the length of a screw	m cm mm
g	the height of your cup	m cm mm
h	the length of a bus	m cm mm
i	the thickness of a window pane	m cm mm
j	the width of a chair	m cm mm

Answers to Exercise Four

a) m b) mm c) cm d) m e) cm f) mm g) cm
h) m i) mm j) cm

Exercise Five

For each item, circle the letter of the most reasonable unit of measure. Check your work using the answer key at the end of the exercise.

a) The width of a doorway
   a) 50 mm
   b) 1 m
   c) 50 cm

b) The length of your pencil
   a) 20 m
   b) 20 mm
   c) 20 cm

c) The height of a tall building
   a) 1 m
   b) 100 m
   c) 10 m

d) The height of a refrigerator
   a) 20 m
   b) 200 m
   c) 2 m

e) The diameter of a quarter
   a) 24 mm
   b) 24 cm
   c) 24 m

f) The height of the kitchen counter
   a) 9 m
   b) 9 cm
   c) 90 cm

g) The distance around your wrist
   a) 15 mm
   b) 15 cm
   c) 15 m

h) The width of a small TV screen
   a) 28 mm
   b) 28 cm
   c) 28 m

i) The length of a car
   a) 5 m
   b) 5 cm
   c) 5 mm

j) the height of a bookcase
   a) 2 cm
   b) 2 mm
   c) 2 m

Answers to Exercise Five

a) b b) c c) b d) c e) a f) c g) b
h) b i) a j) c

Exercise Six

Fill in the blank with the most reasonable unit of measure.
Check your work using the answer key at the end of the exercise.

a) Most hand held calculators are about 15 _____ long.

b) The CN Tower in Toronto is 555 _____ tall.

c) Many young men have an 80 _____ waist.

d) Computer monitor screens are 28 _____ wide.

e) The handle of a hammer is 20 _____ long.

f) A table is about 65 _____ long.

g) The seat of a chair is about 30 _____ above the floor.

h) The window is about 3 _____ long.

i) A roll of tape is about 13 _____ wide.

j) A rope is about 7 _____ thick.

Answers to Exercise Six

a) cm b) m c) cm d) cm e) cm f) cm g) cm
h) m i) mm j) mm

Measuring Capacity (Volume)

Volume is a measure of how much space something takes up. The basic unit of measure for volume is the **Litre (L)**.

Can you think of two things that we buy in litres? We buy gasoline and milk in litres.

We use **millilitres (mL)** to measure small volumes. For example, a small cup of coffee is about 180 mL. Can you think of two things we buy in mL?

Exercise Seven

Circle the unit of measure you would use to measure each item. Check your work using the answer key at the end of the exercise.

	Item	L or mL
a	Bottle of pop	
b	Gasoline	
c	Car window wash	
d	Can of beans	
e	Large bottle of juice	
f	Liquid dish soap	
g	Cough syrup	
h	Mixing bowls	
i	Ketchup	
j	Shampoo	
k	Vinegar	
l	Bathtub	
m	Ice cube tray	
n	Paint	

Answers to Exercise Seven

a) mL b) L c) L d) mL e) L f) mL or L g) mL
h) L i) mL or L j) mL k) L l) L m) mL n) L

Exercise Eight

Circle the letter of the most reasonable unit of measure.
Check your work using the answer key at the end of the exercise.

a) A can of soup
   a) 3 L
   b) 30 mL
   c) 300 mL

b) A large container of ice cream
   a) 5 L
   b) 500 mL
   c) 50 mL

c) A hot water heater
   a) 200 mL
   b) 50 L
   c) 200 L

d) A cup of tea
   a) 18 mL
   b) 180 mL
   c) 218 L

e) A garbage can
   a) 120 L
   b) 120 mL
   c) 12 L

f) A saucepan
   a) 2 L
   b) 20 L
   c) 2 mL

g) A dose of cough syrup
   a) 40 L
   b) 4 mL
   c) 40 mL

h) The gas tank of a car
   a) 500 mL
   b) 5 L
   c) 50 L

i) A jar of mustard
   a) 150 mL
   b) 15 L
   c) 15 mL

j) A large mixing bowl
   a) 6 mL
   b) 60 L
   c) 6 L

Answers to Exercise Eight

a) c b) a c) c d) b e) a f) a g) b
h) c i) a j) c

Measuring Mass

Mass is a measure of matter in something. The basic unit of measure for mass is the **gram (g)**. We buy sliced meats, bulk food, spices and cereal in grams.

We use **kilogram (kg)** to measure the mass of large things such as cars, people, flour and sugar. Can you think of two things that we buy in kilograms?

We use **milligram (mg)** to measure the mass of small things such as medicine or vitamins. A **milligram** is very small. Can you think of two things that we buy in milligrams?

Exercise Nine

Circle the unit of measure you would use to measure each item. Check your work using the answer key at the end of the exercise.

	Item	Unit of Measure		
a	Pasta	mg	g	kg
b	Vitamin C	mg	g	kg
c	Peanut butter	mg	g	kg
d	Flour	mg	g	kg
e	Nails	mg	g	kg
f	Dry dog food	mg	g	kg
g	Rice	mg	g	kg
h	Cookies	mg	g	kg
i	Apples	mg	g	kg
j	Spices	mg	g	kg
k	Cement	mg	g	kg
l	Medicine tablets	mg	g	kg
m	The family pet	mg	g	kg
n	A coin	mg	g	kg

Answers to Exercise Nine

a) g or kg b) mg c) g or kg d) kg e) kg f) kg g) kg
h) g i) kg j) mg k) kg l) mg m) kg n) mg

Exercise Ten

Circle the letter of the most reasonable unit of measure.
Check your work using the answer key at the end of the exercise.

a) A nickel
   a) 5 kg
   b) 5 g
   c) 50 g

b) A small television
   a) 8 g
   b) 8 kg
   c) 80 kg

c) A flashlight battery
   a) 8 g
   b) 8 kg
   c) 80 g

d) A baby
   a) 30 kg
   b) 3 kg
   c) 300 g

e) A dinner fork
   a) 50 g
   b) 5 g
   c) 5 kg

f) A slice of bread
   a) 2 g
   b) 20 g
   c) 2 kg

g) A sugar cube
   a) 2 mg
   b) 20 g
   c) 2 g

h) A refrigerator
   a) 120 g
   b) 120 kg
   c) 12 kg

i) A bag of potatoes
   a) 5 g
   b) 5 kg
   c) 50 mg

j) A car
   a) 100 kg
   b) 1 000 kg
   c) 10 kg

k) A chocolate bar
   a) 300 mg
   b) 300 kg
   c) 300 g

l) A back pack
   a) 12 kg
   b) 12 g
   c) 12 mg

Answers to Exercise Ten

a) b b) b c) a d) b e) a f) b g) c
h) b i) b j) b k) c l) a

Metric Prefixes

In the metric system a prefix is used to tell if something is large or small. A **prefix** is a part of a word that is added to the start of word to change the meaning.

The base units of measure in the metric system are the **metre (m), litre (L) and gram (g)**.

If the prefix **kilo** is added to one of the base units of measures, such as kilometre or kilogram, you know that these are large amounts.

A **kilometre** is 1 000 metres.
A **kilogram** is 1 000 grams.

If the prefix **centi or milli** is added to one of the base units of measure, such as centimetre or milligram, you know that these are small amounts.

It takes 100 **centimetres** to make a metre.
It takes 1 000 **milligrams** to make a gram.

Measures	Large	Base	Small
Length	kilometre (km)	metre (m)	centimetre (cm) millimetre (mm)
Volume		litre (L)	millilitre (mL)
Mass	kilogram (kg)	gram (g)	milligram (mg)

Exercise Eleven

Write large, small or base on the line. Check your work using the answer key at the end of the exercise.

a) kilometre _____

b) millilitre _____

c) metre _____

d) gram _____

e) Litre _____

f) millimetre _____

g) milligram _____

h) kilogram _____

i) centimetre _____

Answers to Exercise Eleven

a) large b) small c) base d) base e) base f) small g) small
h) large i) small

Exercise Twelve

Write the base unit of measure and then the prefix if one is needed. Check your work using the answer key at the end of the exercise.

	Item	Base	Prefix (if needed)
a	Height of a tree		
b	A bottle of vanilla		
c	A cold tablet		
d	Distance between Vancouver and Toronto		
e	Thickness of a piece of paper		
f	Length of your foot		
g	Length of a piece of lumber		
h	A bottle of hand lotion		
i	A granola bar		
j	Diameter of a DVD		
k	Mass of a book		
l	Water in a hot tub		
m	Distance around the Earth		
n	Gap in a spark plug		

Answers to Exercise Twelve

	Item	Base	Prefix (if needed)
a	Height of a tree	*m*	
b	A bottle of vanilla	*L*	*milli*
c	A cold tablet	*g*	*milli*
d	Distance between Vancouver and Toronto	*m*	*kilo*
e	Thickness of a piece of paper	*m*	*milli*
f	Length of your foot	*m*	*centi*
g	Length of a piece of lumber	*m*	
h	A bottle of hand lotion	*L*	*milli*
i	A granola bar	*g*	
j	Diameter of a DVD	*m*	*centi*
k	Mass of a book	*g*	
l	Water in a hot tub	*L*	
m	Distance around the Earth	*m*	*kilo*
n	Gap in a spark plug	*m*	*milli*

Exercise Thirteen

Write the unit of measure you would use for each item below.
Check your work using the answer key at the end of the exercise.

	Item	Unit of Measure
a	***Coffee in a cup***	***millilitres (mL)***
b	Bag of potatoes	
c	Gas for a car	
d	Length of the hall	
e	Vitamin C tablet	
f	Thickness of glass	
g	Width of a page	
h	Box of cereal	
i	Distance from Vancouver to Halifax	
j	Height of a child	
k	Can of soup	
l	Window wash for the car	
m	Dose of heart medicine	
n	Length of a machine bolt	
o	Cheese	

Answers to Exercise Thirteen

a) mL b) kg c) L d) m e) mg f) mm g) cm
h) g i) km j) m k) mL l) L m) mg n) mm
o) kg

Area of Rectangles and Squares

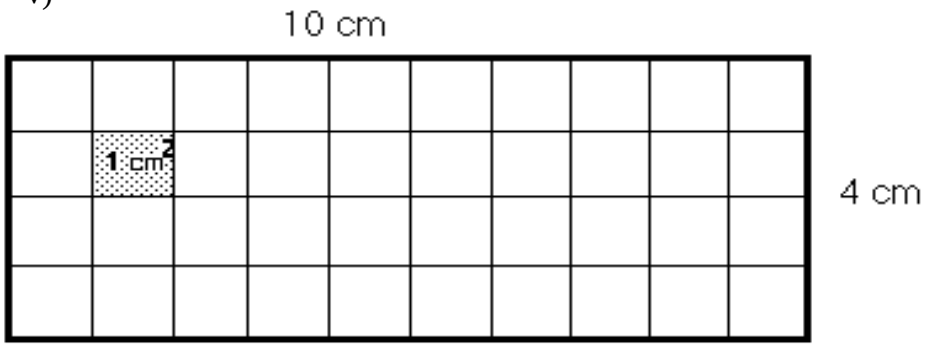
Area is the amount of surface within a figure. Area is described using *square units*.

For example,

- If the figure is a room, the **area** is the floor surface.
- If the figure is a tabletop, the area is the top surface of the table.
- If the figure is a roof, the area would be the shingled surface.
- If the figure is property, the area is the ground within the property lines.
- If the figure is this page, the area is the entire flat page that you are reading.

Example A: Find the area of this rectangle.

v)



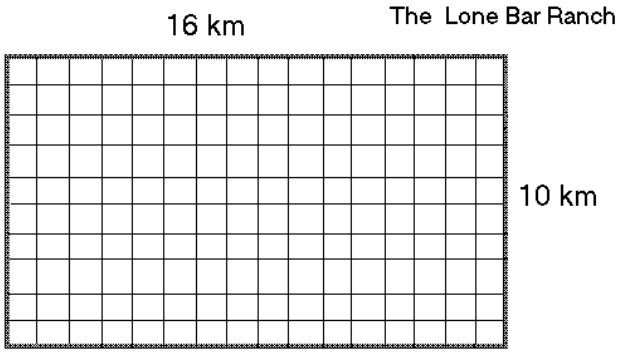
The measurements of this rectangle are given in centimetres. To measure the area, we will use squares which are 1 cm by 1 cm (**a square centimetre**). How many square centimetres will fit on the surface of this rectangle? Count the 1 cm squares drawn within the Example A rectangle.

The area of this rectangle is _____ square centimetres.

This is written as ____ cm^2
Square centimetres is usually written **cm^2** which is said as "square centimetres" or "centimetres squared". The small number is called an *exponent* and if the exponent is 2, it means multiplied by itself, so cm^2 means cm × cm.

Square kilometres are written **km^2**. Square metres are written **m^2.**

Example B: This is a diagram of a large cattle ranch. The measurements of the ranch are shown as kilometres. What is the area of this ranch?



The square units to measure will be **square kilometres**. The area of this ranch will be the number of units 1 km by 1 km (km^2). The diagram shows how many square kilometres would fit in an area 16 km by 10 km. Count them. The area of the Lone Bar Ranch is ____ km^2.

Did you find a quick method for counting the square units? Did you multiply the number of rows by the number of square kilometres in each row? The quick method of finding the area of a rectangle is to multiply the length by the width.

Use this formula **to find the area of a rectangle:**

$$\mathbf{A}_{\mathbf{rectangle}} = \boldsymbol{l} \times \boldsymbol{w}$$

Area of a rectangle = length (l) × width (w)
Length times width can also be expressed as *lw*,

so $\mathbf{A_{rectangle}} = \boldsymbol{lw}$

The answer **must** be expressed in square units.

Example C: Give the area of a soccer field that is 100 m by 45 m.

$A_{rectangle} = lw$

Area of the soccer field = 100 m × 45 m = 4 500 $\mathbf{m^2}$

Exercise One

Find the area of the rectangles described below. The measures of the length (l) and the width (w) have been given. Draw and label a picture for each. Be sure to write the unit of measure for each answer. Check your work using the answer key at the end of the exercise.

a) l = 10 cm
w = 6 cm

b) l = 100 km
w = 70 km

c) l = 400 km
w = 100 km

d) l = 975 cm
w = 35 cm

e) l = 196 cm
w = 28 cm

f) l = 82 km
w = 12 km

g) l = 60 cm
w = 250 cm

h) l = 90 cm
w = 2 cm

Answers to Exercise One

a) 60 cm^2 b) 7 000 km^2 c) 40 000 km^2 d) 34 125 cm^2
e) 5 488 cm^2 f) 984 km^2 g) 15 000 cm^2 h) 180 cm^2

Squares are rectangles with all four sides congruent (the same length). So to find the area of a square you still use the same formula of multiplying the length times the width. But since the length and the width of a square are the same, you are multiplying the measure of the side (s) by itself. The formula for finding the area of a square is often written using an exponent.

$$\text{A square} = \mathbf{s^2}$$

For example, to find the area of a square piece of property, multiply the length of one side by itself. If the measure of one side of a property is 75 m,

Area of this piece of property: $75^2 = 75\text{m} \times 75\text{m} = 5\,625\ \text{m}^2$

Exercise Two

Find the area of the squares. The measure of the side has been given. Draw and label a picture for each. Be sure to write the unit of measure for each answer. Check your work using the answer key at the end of the exercise.

a) A_{square}, if $s = 5$ cm

b) A_{square}, if $s = 125$ km

c) A_{square}, if $s = 45$ mm

d) A_{square}, if $s = 100$ m

e) A_{square}, if s = 14 km

f) A_{square}, if s = 25 cm

Answers to Exercise Two

a) 25 cm^2 b) 15 625 km^2 c) 2 025 mm^2 d) 10 000 m^2

e) 196 km^2 f) 625 cm^2

Problems Using Area

Exercise Three

Do these problems by following the five problem solving steps. Be sure to draw a picture. Check your work using the answer key at the end of the exercise.

a) A garden in the shape of a rectangle is 34 m long and 20 m wide. What is the area of the garden?

b) Mr. Pavelski has a lot in the shape of a square. If the side of his square lot is 50 m, what is the area of the lot?

c) A rectangular board is 58 cm wide and 64 cm long. How much area will this board cover?

d) Kyoko bought some curtain material that is 198 cm long and 40 cm side. How many square centimetres of material did she buy

e) The distance between bases of a baseball diamond (a square) is 27 m. What is the area of the baseball diamond?

f) The janitor waxed the floor that was 24 m long and 18 m wide. How many square metres of floor did he wax?

g) The bulletin board in the hall is 66 cm long and 58 cm wide. What is the area of the bulletin board?

h) In the Canadian Football League (CFL) the field of play measures 101 m long by 59 m wide. What is the area of the football field?

i) The size of the ice surface for international hockey is 61 m long by 31 m wide. What is the area of the ice surface?

j) The size of a soccer pitch for international play is 105 m long and 68 m wide. What is the area of an international soccer field?

k) The base of the Eiffel Tower is a square whose side is 102 m long. What is the area of the base of the Eiffel Tower?

Answers to Exercise Three

a) 680 m^2	b) 2 500 m^2	c) 3 712 cm^2	d) 7 920 cm^2
e) 729 m^2	f) 432 m^2	g) 3 828 cm^2	h) 5 959 m^2
i) 1 891 m^2	j) 7 140 m^2	k) 10 404 m^2	

Perimeter and Area of Rectangles and Squares

Rectangle

Perimeter means **distance around**. To find the **perimeter** of a rectangle, use the formula

P = 2 x length + 2 x width.

Example A:

P = 2 x length + 2 x width

= 2 x 4 cm + 2 x 2 cm

= 8 cm + 4 cm

= 12 cm

Remember: Multiply first and then add.

Area means **the amount of surface within a shape**. To find the **area** of a rectangle, use the formula

A = length x width

Example A:

A = length x width

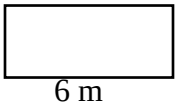
= 4 cm x 2 cm

= 8 cm^2

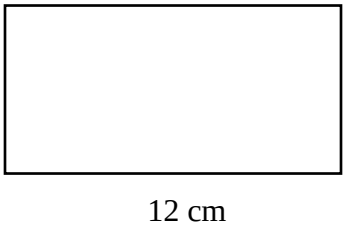
Exercise Four

For each rectangle, find both the perimeter (distance around) and the area (amount of surface within). Check your work using the answer key at the end of the exercise.

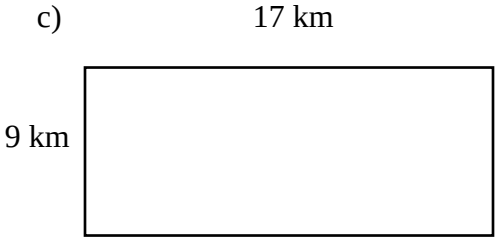
a)



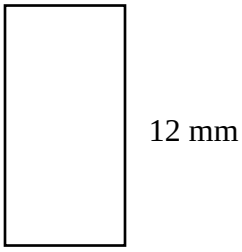
b)



c)

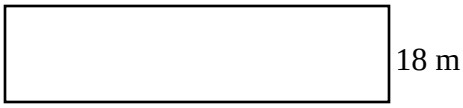


d)



e)

f)



g) Raoul's lot is shaped like a rectangle. If it is 55 m long and 15 m wide, what is the perimeter and area of his lot?

h) The playground is shaped like a rectangle. Its length is 140 m and its width is 60 m. What is the perimeter and area of the playground?

Answers to Exercise Four

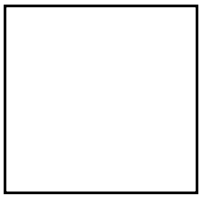
a) P = 16 m, A = 12 m^2
b) P = 38 cm, A = 84 cm^2
c) P = 52 km, A = 153 km^2
d) P = 40 mm, A = 96 mm^2
e) P = 94 m, A = 480 m^2
f) P= 166 m, A = 1 170 m^2
g) P = 140 m, A = 825 m^2
h) P = 400 m, A = 8 400 m^2

Square

Perimeter means **distance around**. To find the **perimeter** of a square, use the formula

$$\mathbf{P = 4 \times side} \text{ or } \mathbf{P_{square} = 4s}$$

Example A:



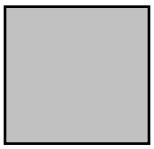
9 cm

$$\mathbf{P = 4 \times side}$$
$$\mathbf{= 4 \times 9\ cm}$$
$$\mathbf{= 36\ cm}$$

Area means **the amount of surface within a shape**. To find the **area** of a square, use the formula

$$\mathbf{A = side^2} \text{ or } \mathbf{A_{square} = s^2}$$

Example A:



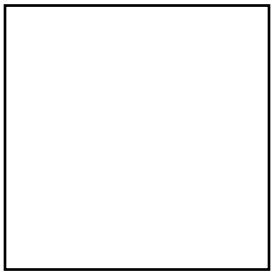
4 cm

$$\mathbf{A = side^2}$$
$$\mathbf{= (4\ cm)^2}$$
$$\mathbf{= 16\ cm^2}$$

Exercise Five

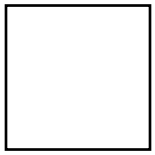
For each square, find both the perimeter (distance around) and the area (amount of surface within). Check your work using the answer key at the end of the exercise.

a)



5 m

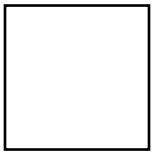
b)



9 cm

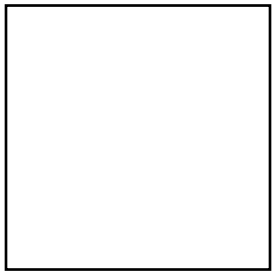
c)

15 cm



d)

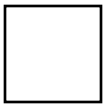
38 cm



e)

42 cm

f)



57 mm

g) Luisa bought a 115 cm square tablecloth. What is the perimeter and area of the tablecloth?

h) Mr. Liang bought a square tarp whose side was 31 m. What is the perimeter and area of the tarp?

Answers to Exercise Five

a) P = 20 m, A = 25 m^2 b) P = 36 cm, A = 81 cm^2 c) P = 60 cm, A = 225 cm^2

d) P = 152 cm, A = 1 444 cm^2 e) P = 168 cm, A = 1 764 cm^2 f) P = 228 mm, A = 3 249 mm^2

g) P = 460 cm, A = 13 225 cm^2 h) P = 124 m, A = 961 m^2

Topic D: Self-Test

Mark /32 **Aim 26/32**

A. For each item, circle the unit of measure you would use. **8 marks**

	Item	Unit of Measure			
a	Height of a doorknob above the floor	m	cm	mm	km
b	Thickness of a piece of wire	m	cm	mm	km
c	Length of a ski	m	cm	mm	km
d	Thickness of a piece of string	m	cm	mm	km
e	Height of a fence	m	cm	mm	km
f	Length of a finger	m	cm	mm	km
g	Length of a football field	m	cm	mm	km
h	How far you travelled on your holiday	m	cm	mm	km

B. Circle the letter of the most reasonable measure. **6 marks**

a) Storage box
   a) 66 mL
   b) 66 L
   c) 6 L

b) Baby Shampoo
   a) 593 mL
   b) 593 L
   c) 59 L

c) Antifreeze
   a) 40 L
   b) 4 L
   c) 40 mL

d) Wastebasket
   a) 42 mL
   b) 4 L
   c) 42 mL

e) Deodorant
   a) 354 L
   b) 35 mL
   c) 354 mL

f) Liquid laundry soap
   a) 975 mL
   b) 97 L
   c) 975 L

C. Circle the unit of measure you would use. **6 marks**

	Item	Unit of Measure
a	Can of peanuts	mg g kg
b	Cat litter	mg g kg
c	An antacid tablet	mg g kg
d	Bag of potato chips	mg g kg

e) A fish
   a) 5 g
   b) 5 mg
   c) 5 kg

f) A bar of soap
   a) 90 mg
   b) 90 kg
   c) 90 g

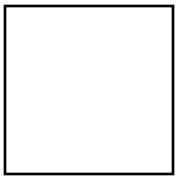
D. Fill in the chart with the right metric prefix. **12 marks**

Small	Base	Large

E. Find the perimeter and area for each shape. **6 marks**

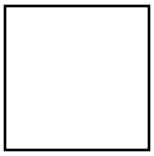
a)

b)



c)

d)



e) A double size bed cover measures 135 cm wide and 190 cm long. What is the perimeter and area of the bed cover?

f) An Olympic size swimming is 50 m long and 25 m wide. What is the perimeter and area of the swimming pool?

Answers to Topic D Self-Test

A.

a) cm b) mm c) cm d) mm e) m or cm f) cm
g) m h) km

B.

a) b b) a c) b d) b e) c f) a

C.

a) g b) kg c) mg d) g e) c f) c

D.

Small	Base	Large
milli	Litre	
milli	metre	kilo
milli	gram	kilo

E.

a) P = 20 cm, A = 21 cm^2 b) P = 24 km, A = 36 km^2 c) P = 410 m, A = 3 864 m^2
d) P = 348 mm, A = 7 569 mm^2 e) P = 650 cm, A = 25 650 cm^2 f) P = 150 m, A = 1 250 m^2

Unit 4 Review – Change, Time and the Metric System

You will now practice all the skills you learned in Unit 4. Check your work using the answer key at the end of the review

A. Circle the number of coins or bills you would need to get from the first number to the second number. Make sure to use the least number of coins or bills.

a) $48 to $50

b) $59 to $60

c) $73 to $80

d) $33 to $40

B. State the number and kind of coins and bills you would need to get from the first number to the second number. Make sure you use the least number of coins and bills as possible.

a) $23 to $25

b) $31 to $35

c) $85 to $90

d) $70 to $90

C. State the number and kind of coins and bills you would need to get from the first number to the second number. Make sure you use the least number of coins and bills as possible.

a) $37 to $50

Need	To get to

b) $53 to $60

Need	To get to

c) $77 to $100

Need	To get to

d) $21 to $50

Need	To get to

D. State the number and kind of coins and bills you would need to get from the first number to the second number. Make sure you use the least number of coins and bills as possible.

a) $63.54 to $80

Need	To get to

b) $32.63 to $50

Need	To get to

c) $20.31 to $40

Need	To get to

d) $72.18 to $100

Need	To get to

E. State the number and kind of coins and bills you would need to get change from $100. Make sure you use the least number of coins and bills as possible.

a)

printer for $78.36

b)

cordless phone for $55.65

c) Mrs. Kono bought a new cordless kettle for $44.78. How much change will Mrs. Kono get from $100?

F. Convert the time units and write the answers in the *simplest form*.

a) 4 800 s = _____h, _____min

b) 1 460 d = _____ y

c) 692 min = _____h, _____min

d) 8 min, 192 s = _____min, _____s

e) 7d, 261 h = _____d, _____h

f) 11h, 452 min = _____h, ____min

g) 1 739 d = _____ y, _____ d

h) 101 h = _____d,_____h

G. Convert the time units.

a) 15 h = _____ min

b) 12 d = _____ h

c) 22 min, 8 s = _____ s

d) 5 y, 193 d = _____ d

e) 3 d, 22 h = _____ h

f) 14 h, 15 min = _____ min

g) 36 min, 11 s = _____ s

h) 2 y, 251 d = _____ d

H. Add the times and write the answers in the *simplest form*. Check your work using the answer key at the end of the exercise.

a) $\begin{array}{r} 5\text{ h, }32\text{ min} \\ +\ 2\text{ h, }45\text{ min} \\ \hline \end{array}$

b) $\begin{array}{r} 2\text{ h, }15\text{ min, }17\text{ s} \\ +\ 1\text{ h, }48\text{ min, }53\text{ s} \\ \hline \end{array}$

I. Subtract these units of time and write the answers in the *simplest form*. Check your work using the answer key at the end of the exercise.

a) $\begin{array}{r} 5\text{ h, }19\text{ min} \\ -\ 3\text{ h, }45\text{ min} \\ \hline \end{array}$

b) $\begin{array}{r} 8\text{ h, }19\text{ min, }10\text{ s} \\ -\ 2\text{ h, }41\text{ min, }51\text{ s} \\ \hline \end{array}$

J. Multiply and write the answers in simplest form. Check your work using the answer key at the end of the exercise.

a) $\begin{array}{r} 3\text{ min, }12\text{ s} \\ \times\ 4 \\ \hline \end{array}$

b) $\begin{array}{r} 2\text{ h, }9\text{ min, }36\text{ s} \\ \times\ 5 \\ \hline \end{array}$

d) It takes Alessandra 1 h, 42 min each day to commute to and from work. If Alessandra works 5 days a week, how long does she commute each week?

K. Circle the letter of the most reasonable measure.

a) Diameter of a hockey puck
   a) 76 mm
   b) 76 m
   c) 76 cm

b) Distance from the mall to home
   a) 10 km
   b) 10 m
   c) 10 cm

c) Thickness of a blanket
   a) 10 m
   b) 10 cm
   c) 10 mm

d) Height of a tree
   a) 28 mm
   b) 28 m
   c) 28 cm

L. Choose the most reasonable measure.

a) Carlos drinks
   a) 500 L of milk
   b) 500 mL of milk
   c) 5 mL of milk

b) A thermos holds
   a) 360 mL
   b) 360 L
   c) 36 L

c) A swimming pool holds 3 758 _____ of water.

d) A tube of lotion is 50 _____.

M. Choose the most reasonable measure.

a) A dog weighs
   a) 17 g
   b) 17 kg
   c) 17 mg

b) A nickel has mass of
   a) 5 g
   b) 5 mg
   c) 5 kg

c) A paper clip has mass of
   a) 1 kg
   b) 1 mg
   c) 1 g

d) Six math books have mass of
   a) 2 kg
   b) 2 mg
   c) 2 g

e) Elena took 400 _____of vitamin A.

f) Suki bought 10 _____ of potatoes.

N. Write the base unit of measure and then the prefix if one is needed.

	Item	Base	Prefix (if needed)
a	Length of a garden hose		
b	A bottle of olive oil		
c	A child's multivitamin		
d	Distance between Jupiter and Mars		
e	Thickness of a kleenex		

O. Write the unit of measure you would use for each item below.

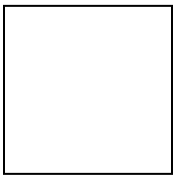
	Item	Unit of Measure
a	Paint thinner	
b	Cat litter	
c	Deodorant	
d	Length of the street	
e	Aspirin	

P. Find the area of each shape.

a) 37 m

16 m

b) 82 cm



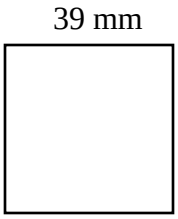
c) Red Square in Moscow measures 330 m long and 70 m wide. What is the area of Red Square?

d) Yoshiro is going to build a square patio whose side is 23 m. What is the area of the patio?

Q. Find the perimeter and area of each shape.

a)

b)



c) Nadal wants to fence his garden. It is 15 m wide and 26 m long. How much fencing does Nadal need? How much space does Nadal have to plant a garden?

d) Yolanda would like to buy fencing and sod for her new lawn that is 54 m long and 42 m wide. How much fencing does she need? How much sod does she need?

Answers to Unit 4 Review

A.

a) 1 twonie b) 1 loonie c) 1 twonie, 1 - $5 d) 1 twonie, 1 - $5

B.

a) 1 twonie b) 2 twonies c) 1 - $5 d) 1 - $20

C.

a) $37 to $50

Need	To get to
1 loonie	$38
1 twonie	$40
1 - $10	$50

c) $77 to $100

Need	To get to
1 loonie	$78
1 twonie	$80
1 - $20	$100

b) $53 to $60

Need	To get to
1 twonie	$55
1 - $5	$60

d) $21 to $50

Need	To get to
2 twonies	$25
1 - $5	$30
1 - $20	$50

D.

a) \$63.54 to \$80

Need	To get to
1 penny	\$63.55
2 dimes	\$63.75
1 quarter	\$64
1 loonie	\$65
1 - \$5	\$70
1 - \$10	\$80

b) \$32.63 to \$50

Need	To get to
2 pennies	\$32.65
1 dime	\$32.75
1 quarter	\$33
1 twonie	\$35
1 - \$5	\$40
1 - \$10	\$50

c) \$20.31 to \$40

Need	To get to
4 pennies	\$20.35
1 nickel	\$20.40
1 dime	\$20.50
2 quarters	\$21
2 twonies	\$25
1 - \$5	\$30
1 - \$10	\$40

d) \$72.18 to \$100

Need	To get to
2 pennies	\$72.20
1 nickel	\$72.25
3 quarters	\$73
1 twonie	\$75
1 - \$5	\$80
1 - \$20	\$100

E.

a) 4 pennies, 1 dime, 2 quarters, 1 loonie, 1 - \$20

b) 1 dime, 1 quarter, 2 twonies, 2 - \$20

c) 2 pennies, 2 dimes, 1 - \$5, 1 - \$10, 2 - \$20

F.

a) 1 h, 20 min b) 4 y c) 11 h, 32 min d) 11 min, 12 s

e) 17 d, 21 h f) 18 h, 32 min g) 4 y, 279 d h) 4 d, 5 h

G.

a) 900 min b) 288 h c) 1 328 s d) 2 018 d

e) 94 h f) 855 min g) 2 171 s h) 981 d

H.

a) 8 h, 17 min b) 4 h, 4 min, 10 s

I.

a) 1 h, 34 min, b) 5 h, 37 min, 19 s

J.

a) 12 min, 48s b) 10 h, 48 min

K.

a) a b) a c) c d) b

L.

a) b b) a c) L d) mL

M.

a) b b) a c) c d) a e) mg f) kg

N.

	Item	Base	Prefix (if needed)
a	Length of a garden hose	***m***	
b	A bottle of olive oil	***L***	***milli***
c	A child's multivitamin	***g***	***milli***
d	Distance between Jupiter and Mars	***m***	***kilo***
e	Thickness of a kleenex	***m***	***milli***

O.

a) L b) kg c) mL or mg d) m e) mg

P.

a) A = 592 m^2 b) A = 6 724 cm^2 c) 23 100 m^2 d) A = 529 m^2

Q.

a) P = 236 m, A = 3 312 m^2

b) P = 156 mm, A = 1 521 mm^2

c) P = 82 m, A = 390 m^2

d) P = 192 m, A = 2 268 m^2

CONGRATULATIONS!!

Now you have finished Unit 4.

TEST TIME!

Ask your instructor for the Practice Test for this unit.
Once you've done the practice test,
you need to do the unit test.
Again, ask your instructor for this.
Good luck!