



Core Maths

You have already had access to induction material, completing tasks for the July induction day. In addition the following need to be completed over the summer and brought with you in September..



GCSE knowledge starter

- Estimate how long to double an investment with a 6% interest rate

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- A coat cost £21 in a sale with 30% off. What was the price before the sale?

.....

- A show displays the following sign:
"10% off + extra 20% off + extra 30% off"
Is this the same as 60% off? Give reasons for your answer

.....
.....
.....

Buying a house

Today we are going to use a variety of skills to solve a problem. It involves you working out various costs of buying a house and whether you can afford it. Choose a house and a job - each job comes with a different mortgage lender. Using the information sheet, answer tasks 1 to 7. Try and work through the tasks before looking at the answer sheet!

Make use of Google and email with any issues: n_greer@taverhamhigh.org]

The Magic Teapot House

\$ 115,000
1 Bedroom
1 Rather Large Window
1 Spout
1 Handle
Tiny Garden



Futurama Futuristic Future House

€ 1,900,000
2 Massive Bedrooms
Large Window Cleaning Bills
Ridiculous Swimming Pool
Real Lawn
Good Weather Forever



Quite Nice Flat

¥ 9,100,000
7th Floor Flat
Real Windows (inc. Glass!)
Stairs Leading To Flat
Pretend Garden
Balcony



Giant "Reight Good" Mansion

₹ 300,000,000
12 Ridiculous Bedrooms
8 Giant Bathrooms
2 Pools
4 Garages
Free Forest Included



Secret Agent

£89,000
You are not James Bond
But you act like him
You drink martinis shaken...

Gangsta Rapper

£120,000
You are famous for the hit songs
"wannabe" and "agadoo"
You are ashamed

The Loan Groan

We will lend you 90% of the house price
at 2.1% interest APR over 15 years

The Ruddy Robber

We will lend you 80% of the house price
at 4.1% interest APR over 12 years

Comic Book Writer

£38,000
You write Batman comics
You are my hero
Only Batman is cooler than you

Social Media Pioneer

£206,000
You make Internety things
People love your work
You are famous for "facespace"

The Purse Pincher

We will lend you 92% of the house price at
3.9% interest APR over 10 years

The Moody Mortgager

We will lend you 85% of the house price
at 1.7% interest APR over 20 years

Information Sheet

All information on this sheet is correct for the tax year 2017-2018

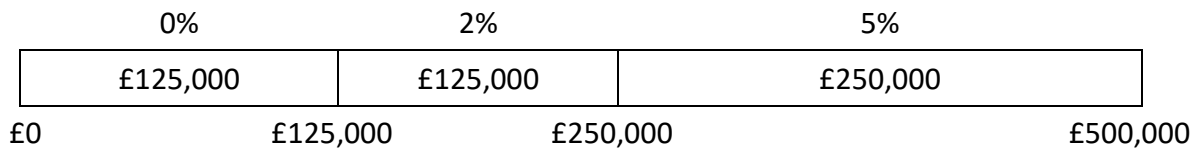
Stamp Duty

Stamp duty is worked out in a similar rate to tax. Here is the table for stamp duty rates:

House price	Stamp duty rate
Less than £125,000	0%
£125,000 to £250,000	2%
Over £250,000	5%

Example

Let's assume you're buying a property for £500,000.



$(0 \times 125,000 + 0.02 \times 125,000 + 0.05 \times 250,000)$

So in total this means you'll pay **£15,000**

Taxation

The personal allowance is £11,850

Tax Rate (Band)	Taxable Income	Tax Rate
Personal allowance	Up to £11,850	0%
Basic rate	£11,851 to £46,350	20%
Higher rate	£46,351 to £150,000	40%
Additional rate	Over £150,000	45%

Exchange rates

£1 = \$1.6

£1 = €1.4

£1 = ₹100

£1 = ¥175

National Insurance

Percentage NI due	Minimum weekly income	Maximum weekly income	Minimum yearly income	Maximum yearly income
0%		£157		£8,164
12%	£157.01	£866	£8,164.01	£45,032
2%	above £866		above £45,032	

Task 1: how much is it anyway?

Calculate the price of your house in pounds (£)

£

Bonus question: do you know what each currency symbol represents?

\$..... €..... ₹..... ¥.....

Task 2: mortgage

Calculate how much money your mortgage lender will give you

£

Task 3: pay back

Calculate how much you will pay back to your mortgage lender (approximate using **compound interest**)

£

Task 4: monthly payment

Calculate how much you will need to pay per month to your mortgage lender

£

Task 5: cash flow

Calculate how much money you earn per month, after tax and national insurance

£

Task 6: affordability

Can you afford your mortgage. Mortgage lenders will refuse to lend to you if your monthly payment is more than 40% of your monthly earnings.

£

Task 7: stamp duty

If these houses were being sold in the UK, you would have to pay stamp duty in most cases. Work out the total cost of initially purchasing your house – this includes the deposit you must pay that your mortgage doesn't cover and stamp duty

£

Answer Sheet

Task 1

The Teapot £71,875.00 (was in dollars)	The Futuristic House £1,357,142.86 (was in euros)
The Flat \$52,000.00 (was in yen)	The Mansion £3,000,000.00 (was in Indian rupees)

Task 2, 3 and 4

The Teapot				
Mortgage	House Price	Mortgage Amount	Pay Back	Monthly
Secret agent	£71,875.00	£64,687.50	£88,349.99	£490.83
Comic book writer	£71,875.00	£66,125.00	£96,944.05	£807.87
Social media pioneer	£71,875.00	£61,093.75	£85,588.58	£356.62
Gangsta rapper	£71,875.00	£57,500.00	£93,127.21	£646.72

The Flat				
Mortgage	House Price	Mortgage Amount	Pay Back	Monthly
Secret agent	£52,000.00	£46,800.00	£63,919.30	£355.11
Comic book writer	£52,000.00	£47,840.00	£70,136.91	£584.47
Social media pioneer	£52,000.00	£44,200.00	£61,921.48	£258.01
Gangsta rapper	£52,000.00	£41,600.00	£67,375.51	£467.89

The Futuristic House				
Mortgage	House Price	Mortgage Amount	Pay Back	Monthly
Secret agent	£1,357,142.86	£1,221,428.57	£1,668,223.39	£9,267.91
Comic book writer	£1,357,142.86	£1,248,571.43	£1,830,496.35	£15,254.14
Social media pioneer	£1,357,142.86	£1,153,571.43	£1,616,082.58	£6,733.68
Gangsta rapper	£1,357,142.86	£1,085,714.29	£1,758,426.85	£12,211.30

The Mansion				
Mortgage	House Price	Mortgage Amount	Pay Back	Monthly
Secret agent	£3,000,000.00	£2,700,000.00	£3,687,651.70	£20,486.95
Comic book writer	£3,000,000.00	£2,760,000.00	£4,046,360.36	£33,719.67
Social media pioneer	£3,000,000.00	£2,550,000.00	£3,572,393.08	£14,884.97
Gangsta rapper	£3,000,000.00	£2,400,000.00	£3,887,048.83	£26,993.39

Tasks 5 and 6

Name	Salary	NI	Tax	Net Pay	Monthly
Social media pioneer	£206,000	£7,643.52	£73,560	£124,796.48	£10,399.71
Secret agent	£89,000	£5,303.52	£23,960	£59,736.48	£4,978.04
Gangsta rapper	£120,000	£5,923.52	£36,360	£77,716.48	£6,476.37
Comic book writer	£38,000	£3,580.32	£5,230	£29,189.68	£2,432.47

Name	Max monthly repayments	Teapot	Future	Flat	Mansion
Social media pioneer	£4,159.88	Yes	No	Yes	No
Secret agent	£1,991.22	Yes	No	Yes	No
Gangsta rapper	£2,590.55	Yes	No	Yes	No
Comic book writer	£972.99	Yes	No	Yes	No

Task 7

	The Teapot	The Flat	The Futuristic House	The Mansion
Deposit	£10,781.25	£10,400.00	£135,714.29	£240,000.00
Stamp Duty	£0	£0	£57,857.14	£140,000.00
Total	£10,781.25	£10,400.00	£193,571.43	£380,000.00

Have a good summer and we look forward to seeing you in September