Pick up the Warm Up

HW Tally

Warm Up

(A) Your name is Kylie Jenner. Your allowance is $10,000 per week. Each week from now on your allowance will grow by 5%.

Geometric Sequence with a multiplier of 1.05

a) What is Kylie's allowance in Week 40?

$u_n = u_1 \cdot r^{n-1}$ $\quad y = ab^x$

$u_{40} = 10{,}000(1.05)^{40-1} = \$67{,}047.51$

b) What is the sum of all her allowances, in total, from Week 1 to Week 40

$S_n = \frac{u_1(r^n - 1)}{r - 1}$ $\quad S_{40} = \frac{10{,}000(1.05^{40} - 1)}{1.05 - 1} = \$1{,}207{,}997.74$

(B) A geometric sequence is 2, 6, 18, 54, ...

Determine the first position (n) that has a term value that exceeds 1,000,000.
(use explicit formulas)

$2 \cdot 3$

$$U_n = U_1 \cdot r^{n-1}$$

$$1{,}000{,}000 = 2(3)^{n-1}$$

$$1{,}000{,}000 = 2(3)^{n-1}$$

$$500{,}000 = 3^{n-1}$$

$$\log(500\,000) = \log 3^{n-1}$$

$$\log(500000) = (n-1)\log 3$$

$$n-1 = \frac{\log(500000)}{\log 3}$$

$$n - 1 = 11.9444\ldots$$

$n = 12.9444\ldots$

So the 13th term is the first term that exceeds 1000000

3 A geometric sequence has $U_6 = 24$ and $U_{11} = 768$

Use explicit formulas to determine the the first term and common ratio.

make a double substitution into $U_n = U_1 \cdot r^{n-1}$

$24 = U_1 \cdot r^{6-1}$ $\quad 768 = U_1 \cdot r^{11-1}$

$24 = U_1 \cdot r^5$ $\quad 768 = U_1 r^{10}$

$U_1 = \frac{24}{r^5}$ $\quad 768 = \left(\frac{24}{r^5}\right) \cdot r^{10}$

$768 = 24 \cdot r^5$

$\frac{24}{2^5} = \frac{3}{4}$ $\quad r^5 = \frac{768}{24}$ $\quad r = \sqrt[5]{\frac{768}{24}} = 2$

Then find U_{20}

$U_{20} =$

HW Questions ?

(4) Find k if 3k, k-2, and k+7 are consec terms.

arithmetic

⑥ $u_n = 6\left(\frac{1}{2}\right)^{n-1}$

a) Prove it is geometric

b) Find $u_1 =$ $r =$

c) $u_{16} =$ to 3 sig figs.

Find k given $4, k, k^2-1$ are consec. geometric

before we start
the last topic in this unit....

Final Exam

the "real" final exam is your actual IB Math exam in May.

Last 4 days of this trimester

- help prepare for that
- "Shrunken Value" Final Exam
  - Paper 1
  - Paper 2

practice

Monday Nov. 20th

Draft 2 is due (80 points in this class)

P4

Writing guide

→ Primary Data

→ Seniors

Submit

1. Revised Intro
2. Description of Data Collect.
3. Data

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4 Submitting data in a ~~table~~

Next week, we'll start

Logic

Separate quizzes sprinkled in

on → Sequences ✓

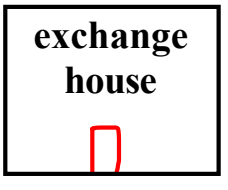
→ Finance Math ✓

Next Tuesday → Turn in yellow HW Packet

Aim: Perform Currency conversions

between international currencies

Currency conversions



CURRENCIES

currency exchange rates quoted by the Commonwealth Bank on Jul 13

	Bank buys	Bank sells		Bank buys	Bank sells
US dollar	0.7303	0.7216	Malta lira	0.2534	0.2443
Europe euro	0.5933	0.5769	NZdollar	1.1087	1.0826
UK pound	0.3935	0.3851	Norway kroner	5.0118	4.8797
Canada dollar	0.9665	0.9432	Pakistan rupee	n/a	n/a
China renminbi	n/a	n/a	PNG kina	n/a	2.0261
Denmark kroner	4.4034	4.2874	Philippines peso	n/a	38.538
Fiji dollar	n/a	1.2359	Singapore dollar	1.2462	1.209
Fr Pacific franc	71.51	67.56	S Africa rand	4.5082	4.2725
Hong Kong dollar	5.7386	5.5579	Sri Lanka rupee	76.13	70.06
India rupee	33.67	32.068	Sweden krona	5.4512	5.3076
Indonesia rupiah	n/a	n/a	Switzerland franc	0.8998	0.8761
Japan yen	79.45	77.35	Thailand bant	30.09	27.56
Malaysia ringgit	n/a	n/a	Vanuatu vatu	n/a	79.55

Is it true....

there are 7 days in 1 week ?

$\frac{7 \text{ days}}{1 \text{ week}}$ $\frac{1 \text{ week}}{7 \text{ days}}$

handout

example 1 **1 GBP = 1.80 USD**

As with all rates, they can be written in two ways:

$\frac{1 \text{ GBP}}{1.80 \text{ USD}}$ $\frac{1.80 \text{ USD}}{1 \text{ GBP}}$

example 2

1. If $1 Canadian buys $5.706 Hong Kong, how many Hong Kong dollars could be bought for $1250 Canadian?

5.706 HK / 1 Can

$$1250 Can \cdot \frac{5.706 HK}{1 Can} = \$7132.50 HK$$

Buying and Selling

Any enterprise that exchanges currency will offer both a buying and a selling rate. It's important to remember that these rates are offered by the bank and as such refer to the bank buying from or selling to the customer.

Consider the following table that shows the buying and selling rate for exchanging money from Euros (€) to US$,

You sell 1 USD and buy EUR	You buy 1 USD - sell EUR
0.82537	0.82545

1 USD / .82545 €

How many US$ would the bank sell you in return for 100€?

buying USD $100 € \cdot \frac{1 USD}{.82545 €} = 121.15 USD$

How many Euros would the bank give you if they bought the US$ right back?

buying Euro $121.15 USD \cdot \frac{.82537 €}{1 USD} = 99.99 €$

How many Euros did the bank make from those two transactions?

.01 €

Commission

Another means for making profit from currency exchange is to charge a commission for exchanging currencies. This amounts to either a fixed amount or a percentage of your initial amount being charged before the currency is exchanged.

example 3

If $800 is exchanged into GBP at the rate mentioned above and the bank charges 2.5% commission, calculate the amount received in GBP.

2.5% of 800

First, calculate the commission

$= 800 \times (.025) = \$20$

Then, apply the exchange rate on how much you left

$800 - 20 = 780$ USD

$780 \text{ USD} \times \frac{1 \text{ GBP}}{1.8 \text{ USD}} = 433 \text{ GBP}$

433.33

Example 4

A bank exchanges US dollars for a 1.8% commission. Convert $400 US to UK pounds if $1 US buys 0.53379 UK pounds.

What commission is charged? What does the customer receive ?

400 (0.018)

1. $Commission = 400 \bullet 1.8\% = \$7.20\ US$

2. $\text{Receives}(400 - 7.20)US \bullet \frac{0.53379UK}{1US} = 209.67\ UK$

B.B.

Sequence Assignment #4

HH Text
p. 419.... Review Set C..... 1, 3-8

- Work on it for the remainder of the period
- Due Tuesday (So you can work on your project)