

BEETLE GAME

Purpose of the game

Beetle is a British party game in which one draws a beetle in parts. The game is played with pencil, paper and a dice (Wikipedia, 2013). In our after school maths clubs we have adapted the game as described below so that it can work in a classroom or small group context. The adapted version can be beneficial for:

- Developing collaboration and turn taking in learners
- Developing mathematical fluency in a non-rote way. For example it can help develop fluency in simple addition, use of efficient addition strategies, multiplication (repeated addition), doubling or halving. It can also be used for developing estimation strategies.
- Learning to follow game rules

We play this game in the first or second session of a new club as it is an ideal way to model how the club ethos works. Once played, we have found that the learners love this game and constantly ask to re-play it. We have printed a number of scorecards and have laminated them, so they can be re-used with dryboard markers. We have also encouraged learners to play the game at home with their family as a way of encouraging learners to use maths outside of school and getting other family members involved.

The game has been used extensively around the world as fund-raising mechanism. In South African specifically it is used by the Boy Scouts and Girl Guides as a way of raising funds. It could be used in your school for the same purpose. When used as a fund-raiser there is less focus on the mathematics and the game is much faster. For information on how it is used differently as a fund-raiser, see the links below¹.

Basic Play

- Learners work in pairs with 1 dice per pair
- All pairs start at the same time with “Ready, set, go!”
- One person in the pair will draw the beetle and the other will throw the dice.
- Throw the dice in order to draw the beetle. See ‘**Drawing the Beetle**’ on the next page. Note that for drawing the wings, legs, eyes and feelers, only one can be drawn each time the dice lands. So this means that in order to draw all 6 legs, the dice must land on a 3 six times during play.
- When a pair has drawn a complete beetle, they shout “**Beetle**” and all other pairs must stop playing.
- Each pair adds up the number of body parts they have drawn with the maximum being 14 for the full beetle. If one pair has only drawn a body, head and two legs, their score would be 4. Write this on a scorecard or piece of paper.
- Players swap roles and play again. Play between 4 or 6 games.
- After playing 4 or 6 games, pairs add up their scores using any strategies they wish.
- Pair with highest score wins.

Extension activities

- Before each pair adds up scores, the whole group can **estimate** which pair they think has the highest score and lowest score. Discuss strategies
- Then each pair adds up their score and hand to another pair to check and agree/disagree
- Check actual scores against estimates
- Once scores have been added up for each pair, add up the scores for the entire group (extending into larger numbers)

¹ Fundraiser ideas can be found on these websites: <http://www.better-fundraising-ideas.com/beetle-drive.html>

Drawing the Beetle²

There are **14 body parts** - body, head, 2 wings, 6 legs, 2 feelers, 2 eyes

- you must throw a 6 to **START** - and you can then draw the **BODY**
- throw a 5 - draw the **HEAD** - must be drawn before eyes & feelers
- throw a 4 - draw one **WING** at a time (2 of these)
- throw a 3 - draw one **LEG** at a time (6 of these)
- throw a 2 - draw one **FEELER** at a time (2 of these). Must have the head first
- throw a 1 - draw one **EYE** at a time (2 of these). Must have the head first

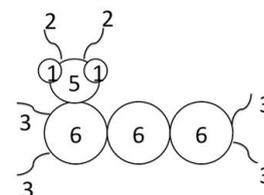


Other game variations for different mathematical skills

- *Practice doubling or halving:* Score as above but at the end of the entire game, double or halve the final game scores. Discussion might result about how to halve odd numbers.
- *Practice working in multiples (or repeated addition):* Rather than scoring 1 point per body part, use the actual values of each body part as the score. This will get the learners thinking and working on strategies. The maximum score for each game will then be 43. e.g.

| Body | Head | Eyes | Feelers | Legs | Wings |
|------|------|-------|---------|-------|-------|
| 6 | 5 | 2 x 1 | 2 x 2 | 6 x 3 | 4 x 2 |

- *Draw crazy creatures:* Throw the dice a certain number of times (for example 12) and draw the creature that you get. Add up the values of the body parts drawn from the dice throws. See example to the right where I threw the dice 12 times and drew my 'creature' as I went along: three bodies (6s), four legs (3s), one head (5), two feelers (2s) and two eyes (1s), to get a score of 41. One way of working this out could be like this:



Draw Crazy Creatures

| | | | | | |
|-------------|-------------|-------------|-------------|----------------|------|
| <u>Head</u> | <u>Body</u> | <u>Legs</u> | <u>Eyes</u> | <u>Feelers</u> | |
| 5 + | 3 x 6 + | 3 x 4 + | 2 x 1 + | 2 x 2 | |
| 5 + | 18 + | 12 + | 2 + | 4 | = 41 |

Draw other creatures

For an easier image to draw and a quicker game, draw a penguin with a total of 8 body parts:

- you must throw a 6 to **START** - and you can then draw the **BODY** (which includes a head)
- throw a 5 - draw one **EYE** at a time (2 of these)
- throw a 4 - draw one **WING** at a time (2 of these)
- throw a 3 - draw one **FOOT** at a time (2 of these)
- throw a 2 - draw one **NOSE**
- throw a 1 - throw again



References

South African Numeracy Chair Project. (2012). Numeracy Games with Dice and Cards. Retrieved February 15, 2013, from [http://www.ru.ac.za/media/rhodesuniversity/content/sanc/documents/SANC Games Booklet 2012v1.pdf](http://www.ru.ac.za/media/rhodesuniversity/content/sanc/documents/SANC_Games_Booklet_2012v1.pdf)

Wikipedia. (2013). Beetle (game). *Wikipedia*. Retrieved February 15, 2013, from [http://en.wikipedia.org/wiki/Beetle_\(game\)](http://en.wikipedia.org/wiki/Beetle_(game))

² Sourced and adapted from: http://www.charnwood-catalogue.co.uk/fundraising.php?info_id=138

